CONTRIBUTING ZONE PLAN

RESERVE AT NORTH FORK
401 HERITAGE GROVE ROAD
LEANDER, WILLIAMSON COUNTY, TEXAS

Prepared For:

PULTE HOMES OF TEXAS LP
9401 AMBERGLEN BLVD., BLDG I, SUITE 150
AUSTIN, TX 78729
512-532-3355

Prepared By:

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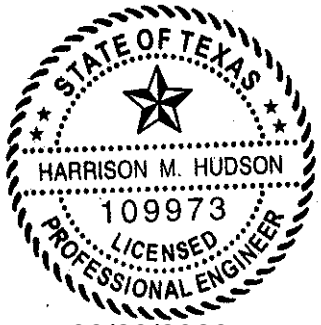

09/29/2020

Firm No. 928
KHA Project No. 069312667

09/27/2020

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Kimley»Horn

SECTION 1:
EDWARDS AQUIFER APPLICATION COVER PAGE

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with 30 TAC 213.

Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

   To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http://www.tceq.texas.gov/field/eapp.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

   An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.
6. If the geologic assessment was completed before October 1, 2004 and the site contains “possibly sensitive” features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the

alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or if not withdrawn the application will be denied and the application fee will be forfeited.

4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "Mid-Review Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available to you:

- You can withdraw your application, and your fees will be refunded or credited for a resubmittal.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the effected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

1. Regulated Entity Name: Reserve at North Fork						**2. Regulated Entity No.:**			
3. Customer Name: Stephen Ashlock **Pulte Homes of Texas, LP**						**4. Customer No.:**			
5. Project Type: **(Please circle/check one)**	New		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	☒ CZP	SCS	UST	AST	EXP	EXT	Technical Clarificatio	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential			**8. Site (acres):**		30.434	
9. Application Fee:	$4,000		**10. Permanent BMP(s):**			Batch Detention			
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**			N/A			
13. County:	Williamson		**14. Watershed:**			Turkey Creek-Brushy Creek			

Application Distribution

Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which cross into multiple jurisdictions, can require additional copies. Refer to the "Texas Groundwater Conservation Districts within the EAPP Boundaries" map found at:

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

For more detailed boundaries, please contact the conservation district directly.

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	___	___	X
Region (1 req.)	___	___	X
County(ies)	___	___	_X_
Groundwater Conservation District(s)	____Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin __Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence ___Georgetown ___Jerrell _X_Leander ___Liberty Hill ___Pflugerville ___Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	___	___	___	___
Region (1 req.)	___	___	___	___	___
County(ies)	___	___	___	___	___
Groundwater Conservation District(s)	___ Edwards Aquifer Authority ___Trinity-Glen Rose	___Edwards Aquifer Authority	___Kinney	___EAA ___Medina	___EAA ___Uvalde
City(ies) Jurisdiction	___Castle Hills ___Fair Oaks Ranch ___Helotes ___Hill Country Village ___Hollywood Park ___San Antonio (SAWS) ___Shavano Park	___Bulverde ___Fair Oaks Ranch ___Garden Ridge ___New Braunfels ___Schertz	NA	___San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Harrison M. Hudson, P.E.
Print Name of Customer/Authorized Agent  09/27/2020 Signature of Customer/Authorized Agent Date

FOR TCEQ INTERNAL USE ONLY			
Date(s)Reviewed:		Date Administratively Complete:	
Received From:		Correct Number of Copies:	
Received By:		Distribution Date:	
EAPP File Number:		Complex:	
Admin. Review(s) (No.):		No. AR Rounds:	
Delinquent Fees (Y/N):		Review Time Spent:	
Lat./Long. Verified:		SOS Customer Verification:	
Agent Authorization Complete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):
Core Data Form Complete (Y/N):			Signed (Y/N):
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):

SECTION 2:
CONTRIBUTING ZONE PLAN APPLICATION

Contributing Zone Plan Application

Texas Commission on Environmental Quality for Regulated Activities on the Contributing Zone to the Edwards Aquifer and Relating to 30 TAC §213.24(1), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Contributing Zone Plan Application** is hereby submitted for TCEQ review and Executive Director approval. The application was prepared by:

Print Name of Customer/Agent: _Harrison M. Hudson, P.E._____

Date: _09/27/2020_____

Signature of Customer/Agent:

_____

Regulated Entity Name:

Stephen Ashlock, Reserve at North Fork

Project Information

1. County: _Williamson_____
2. Stream Basin: Turkey Creek-Brushy Creek
3. Groundwater Conservation District (if applicable): N/A
4. Customer (Applicant):

   Contact Person: Stephen Ashlock
   Entity: Reserve at North Fork
   Mailing Address: 401 Heritage Grove Road
   City, State: Leander, TX Zip: 78741
   Telephone: 512-532-3355 Fax: _____
   Email Address: Stephen.ashlock@pultegroup.com

Agent/Representative (If any):
Contact Person: _Harrison M. Hudson, P.E._____
Entity: _Kimley-Horn and Associates, Inc._____
Mailing Address: _2600 Via Fortuna, Terrace I, Suite 300_
City, State: _Austin, TX_____ Zip: _78746_____
Telephone: _707-202-3202_____ Fax: _____
Email Address: _harrison.hudson@kimley-horn.com__

5. Project Location:

☒ The project site is located inside the city limits of _Leander_____.
☐ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of _____.
☐ The project site is not located within any city's limits or ETJ.

6. ☒ The location of the project site is described below. Sufficient detail and clarity has been provided so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.
. Located in Leander roughly 2000' west of US 183 south of Heritage Grove Rd.

7. ☒ **Attachment A - Road Map**. A road map showing directions to and the location of the project site is attached. The map clearly shows the boundary of the project site.

8. ☒ **Attachment B - USGS Quadrangle Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') is attached. The map(s) clearly show:

☒ Project site boundaries.
☒ USGS Quadrangle Name(s).

9. ☒ **Attachment C - Project Narrative**. A detailed narrative description of the proposed project is attached. The project description is consistent throughout the application and contains, at a minimum, the following details:

☒ Area of the site
☒ Offsite areas
☒ Impervious cover
☒ Permanent BMP(s)
☒ Proposed site use
☒ Site history
☒ Previous development
☒ Area(s) to be demolished

10. Existing project site conditions are noted below:

☐ Existing commercial site
☐ Existing industrial site
☐ Existing residential site

☐ Existing paved and/or unpaved roads
☐ Undeveloped (Cleared)
☒ Undeveloped (Undisturbed/Not cleared)
☐ Other: _____

11. The type of project is:

☒ Residential: # of Lots: __152_____
☐ Residential: # of Living Unit Equivalents: _____
☐ Commercial
☐ Industrial
☐ Other: _____

12. Total project area (size of site): 30.434 Acres

Total disturbed area: 30.434 _Acres

13. Estimated projected population: _____

14. The amount and type of impervious cover expected after construction is complete is shown below:

Table 1 - Impervious Cover

Impervious Cover of Proposed Project	*Sq. Ft.*	*Sq. Ft./Acre*	*Acres*
Structures/Rooftops	445,440.44	÷ 43,560 =	10.23
Parking	168,626.35	÷ 43,560 =	3.87
Other paved surfaces	52,131.61	÷ 43,560 =	1.20
Total Impervious Cover	666,198.4	÷ 43,560 =	15.29

Total Impervious Cover 15.29 ÷ Total Acreage 30.434 X 100 = 50.23% Impervious Cover

16. ☒ **Attachment D - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water quality is attached. If applicable, this includes the location and description of any discharge associated with industrial activity other than construction.

17. ☒ Only inert materials as defined by 30 TAC 330.2 will be used as fill material.

For Road Projects Only

Complete questions 18 - 23 if this application is exclusively for a road project.

☒ N/A

18. Type of project:

☐ TXDOT road project.
☐ County road or roads built to county specifications.
☐ City thoroughfare or roads to be dedicated to a municipality.
☐ Street or road providing access to private driveways.

19. Type of pavement or road surface to be used:

☐ Concrete
☐ Asphalt concrete pavement
☐ Other: _____

20. Right of Way (R.O.W.):

Length o f R .O.W.:_____feet.

Width o f R .O.W.:_____feet.
L x W = _____Ft² ÷ 43,560 Ft²/Acre = _____acres.

21. Pavement Area:

Length o f R .O.W.:_____feet.

Width o f R .O.W.:_____feet.
L x W = _____Ft² ÷ 43,560 Ft²/Acre = _____acres.
Pavement area_____acres ÷ R .O.W. a rea____acres x 100 = ____% impervious cover.

22. ☐ A rest stop will be included in this project.
☐ A rest stop will not be included in this project.

23. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

Stormwater to be generated by the Proposed Project

24. ☒ **Attachment E - Volume and Character of Stormwater**. A detailed description of the volume (quantity) and character (quality) of the stormwater runoff which is expected to occur from the proposed project is attached. The estimates of stormwater runoff quality and quantity are based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

Wastewater to be generated by the Proposed Project

25. ☐ Wastewater is to be discharged in the contributing zone. Requirements under 30 TAC§213.6(c) relating to Wastewater Treatment and Disposal Systems have been satisfied.

☒ N/A

26. Wastewater will be disposed of by:

☐ On-Site Sewage Facility (OSSF/Septic Tank):

☐ **Attachment F - Suitability Letter from Authorized Agent**. An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.

☐ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

☒ Sewage Collection System (Sewer Lines):

The sewage collection system will convey the wastewater to the Travis County MUD No. 4 (name) Treatment Plant. The treatment facility is:

☒ Existing.
☐ Proposed.
☐ N/A

Permanent Aboveground Storage Tanks (ASTs) ≥ 500 Gallons

Complete questions 27 - 33 if this project includes the installation of AST(s) with volume(s) greater than or equal to 500 gallons.

☒ N/A

27. Tanks and substance stored:

Table 2 - Tanks and Substance Storage

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
1			
2			
3			
4			
5			

Total x 1.5 = _____ Gallons

28. ☐ The AST will be placed within a containment structure that is sized to capture one and one-half (1 1/2) times the storage capacity of the system. For facilities with more than

one tank system, the containment structure is sized to capture one and one-half (1 1/2) times the cumulative storage capacity of all systems.

☐ **Attachment G - Alternative Secondary Containment Methods**. Alternative methods for providing secondary containment are proposed. Specifications showing equivalent protection for the Edwards Aquifer are attached.

29. Inside dimensions and capacity of containment structure(s):

Table 3 - Secondary Containment

Length (L)(Ft.)	*Width(W)(Ft.)*	*Height (H)(Ft.)*	*L x W x H = (Ft3)*	*Gallons*

Total: _____ Gallons

30. Piping:

☐ All piping, hoses, and dispensers will be located inside the containment structure.
☐ Some of the piping to dispensers or equipment will extend outside the containment structure.
☐ The piping will be aboveground
☐ The piping will be underground

31. ☐ The containment area must be constructed of and in a material impervious to the substance(s) being stored. The proposed containment structure will be constructed of: _____.

32. ☐ **Attachment H - AST Containment Structure Drawings**. A scaled drawing of the containment structure is attached that shows the following:

☐ Interior dimensions (length, width, depth and wall and floor thickness).
☐ Internal drainage to a point convenient for the collection of any spillage.
☐ Tanks clearly labeled
☐ Piping clearly labeled
☐ Dispenser clearly labeled

33. ☐ Any spills must be directed to a point convenient for collection and recovery. Spills from storage tank facilities must be removed from the controlled drainage area for disposal within 24 hours of the spill.

☐ In the event of a spill, any spillage will be removed from the containment structure within 24 hours of the spill and disposed of properly.

☐ In the event of a spill, any spillage will be drained from the containment structure through a drain and valve within 24 hours of the spill and disposed of properly. The drain and valve system are shown in detail on the scaled drawing.

Site Plan Requirements

Items 34 - 46 must be included on the Site Plan.

34. ☒ The Site Plan must have a minimum scale of 1" = 400'.

    Site Plan Scale: 1" = __100__'.

35. 100-year floodplain boundaries:

    ☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.

    ☒ No part of the project site is located within the 100-year floodplain.
    The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): _FEMA Map Panel No. 48491C0455E Dated Sept. 26th 2008, 2016____.

36. ☒ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Lots, recreation centers, buildings, roads, etc. are shown on the site plan.

    ☐ The layout of the development is shown with existing contours at appropriate, but not greater than ten-foot contour intervals. Finished topographic contours will not differ from the existing topographic configuration and are not shown. Lots, recreation centers, buildings, roads, etc. are shown on the site plan.

37. ☒ A drainage plan showing all paths of drainage from the site to surface streams.

38. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

39. ☒ Areas of soil disturbance and areas which will not be disturbed.

40. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

41. ☒ Locations where soil stabilization practices are expected to occur.

42. ☐ Surface waters (including wetlands).

    ☒ N/A

43. ☒ Locations where stormwater discharges to surface water.

    ☐ There will be no discharges to surface water.

44. ☐ Temporary aboveground storage tank facilities.

    ☒ Temporary aboveground storage tank facilities will not be located on this site.

45. ☐ Permanent aboveground storage tank facilities.

☒ Permanent aboveground storage tank facilities will not be located on this site.

46. ☒ Legal boundaries of the site are shown.

Permanent Best Management Practices (BMPs)

Practices and measures that will be used during and after construction is completed.

47. ☒ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

☐ N/A

48. ☒ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

☒ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site. (Phase 1)

☐ A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is: _____

☐ N/A

49. ☒ Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

☐ N/A

50. Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.

☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.

☒ The site will not be used for low density single-family residential development.

51. The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

☐ **Attachment I - 20% or Less Impervious Cover Waiver**. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.

☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.

☒ The site will not be used for multi-family residential developments, schools, or small business sites.

52. ☐ **Attachment J - BMPs for Upgradient Stormwater**.

☐ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.

☐ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.

☒ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

53. ☒ **Attachment K - BMPs for On-site Stormwater**.

☒ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

54. ☒ **Attachment L - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams is attached.

☐ N/A

55. ☒ **Attachment M - Construction Plans**. Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. Construction plans for the proposed permanent BMPs and measures are

attached and include: Design calculations, TCEQ Construction Notes, all proposed structural plans and specifications, and appropriate details.

☐ N/A

56. ☒ **Attachment N - Inspection, Maintenance, Repair and Retrofit Plan**. A site and BMP specific plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan fulfills all of the following:

☐ Prepared and certified by the engineer designing the permanent BMPs and measures
☒ Signed by the owner or responsible party
☒ Outlines specific procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofit.
☐ Contains a discussion of record keeping procedures

☐ N/A

57. ☐ **Attachment O - Pilot-Scale Field Testing Plan**. Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

☒ N/A

58. ☒ **Attachment P - Measures for Minimizing Surface Stream Contamination**. A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that result in water quality degradation.

☐ N/A

Responsibility for Maintenance of Permanent BMPs and Measures after Construction is Complete.

59. ☒ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

60. ☒ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development,

or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

Administrative Information

61. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions.

62. ☒ Any modification of this Contributing Zone Plan may require TCEQ review and Executive Director approval prior to construction, and may require submission of a revised application, with appropriate fees.

63. ☒ The site description, controls, maintenance, and inspection requirements for the storm water pollution prevention plan (SWPPP) developed under the EPA NPDES general permits for stormwater discharges have been submitted to fulfill paragraphs 30 TAC §213.24(1-5) of the technical report. All requirements of 30 TAC §213.24(1-5) have been met by the SWPPP document.

☐ The Temporary Stormwater Section (TCEQ-0602) is included with the application.

ROAD MAP

IMAGES
XREFS
PLOTTED BY PISCIOTTO, GABRIELE 9/17/2020 1:41 PM
DWG NAME K:\SAU_CIVIL\069312667 PULTE LEANDER S 40\DOC\REPORTS\TCEQ\CZP\VICINITY XBORDER.DWG
LAST SAVED 9/17/2020 1:41 PM

SHEET 1 OF 1 SHEETS	Scale:	AS SHOWN	Vicinity Map
	Designed by:	GP	
	Drawn by:	GP	
	Checked by:	HMH	
	Date:	SEPT 2020	
	Project No.	069312667	

Storm Water Pollution Prevention Plan

PULTE LEANDER SOUTH 40
City of Leander, Williamson County, Texas

N W E S

Kimley»Horn

USGS QUADRANGLE MAP

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

LEANDER QUADRANGLE
TEXAS
7.5-MINUTE SERIES

SITE LOCATION

LEANDER
ROUND ROCK
CEDAR PARK
AUSTIN
Walkerton
White Stone
Bagdad Cem
Davis Cem
Bonnet Cem
Upchurch Cem
Wells Cem
Whitley Cem
Soil Conservation Service Site 2 Reservoir
Soil Conservation Service Site 3 Reservoir
Soil Conservation Service Site 4 Reservoir
Soil Conservation Service Site 19a Reservoir
Hank Sasser Airport at Breakaway
South Fork San Gabriel River
North Fork San Gabriel River
S Fork Brushy Cr
Brushy Cr
S Brushy Cr
Lime Cr
Block House Cr
Chandler Br
Dry Fork Cr
Mayan Cr
Post Oak Cr
Rock House Cr
Spanish Oak Cr
Walsh Lake
Greasy Cafe
Deception
Brushy Creek Regional Trail
TRAVIS CO
WILLIAMSON CO

Produced by the United States Geological Survey

North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 14R

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery	NAIP,	September 2016 - November 2016
Roads	U.S. Census Bureau,	2015
Names	GNIS,	1979 - 2018
Hydrography	National Hydrography Dataset,	2002 - 2018
Contours	National Elevation Dataset,	2002
Boundaries	Multiple sources; see metadata file	2016 - 2017
Wetlands	FWS National Wetlands Inventory	1982

MN
GN
3°43′ 66 MILS
0°36′ 11 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
PU
Grid Zone Designation
14R

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

TEXAS
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 Liberty Hill
2 Leander NE
3 Georgetown
4 Nameless
5 Round Rock
6 Mansfield Dam
7 Jollyville
8 Pflugerville West

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

LEANDER, TX
2019

NSN 7643016396981
NGA REF NO. USGSX24K25238

Map Scale: 1:5,040 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 20, Sep 12, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 16, 2018—May 30, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DnB	Denton silty clay, 1 to 3 percent slopes	35.1	55.9%
DoC	Doss silty clay, moist, 1 to 5 percent slopes	3.8	6.0%
EaD	Eckrant cobbly clay, 1 to 8 percent slopes	3.6	5.7%
FaB	Fairlie clay, 1 to 2 percent slopes	20.3	32.4%
Totals for Area of Interest		**62.8**	**100.0%**

PROJECT NARRATIVE

Introduction

The content of this report is based on 30.434-acre tract of land. The property in acquisition is located on the west side of Highway 183, Northwest of the intersection of Highway 183 and San Gabriel Pkwy, in Leander, Texas. The client is proposing 152 single family lots along with 4 open space lots, 1 utility lot and 2 drainage lots for a total of 159 lots. Kimley-Horn has prepared this Drainage Report to evaluate the existing drainage conditions and highlight the proposed drainage system needed to serve a proposed 152-lot single-family subdivision.

The proposed improvements include mass grading, building construction, road construction, and utilities. This project is located within the Turkey Creek-Brushy Creek Watershed of the Brazos River basin. The impervious cover following these improvements will total 15.29 aces and be 50.23% of the site. A permanent BMP that will be used in this improvement is a batch detention pond.

No portion of this site is located in the Federal Emergency Management Agency's 100-year floodplain per the Flood Insurance Rate Map 48491C0455F dated December 20, 2019, for Williamson County, Texas. No floodplain modifications are proposed.

The entire 30.434 tract is located within the Edwards Aquifer Contributing Zone.

Legal Description

The legal descriptions of the property is AW0134 – Cochran, C. Sur., Acres 30.434.

Land Use

The existing tract is on undeveloped land. No lots within this subdivision are encroached by a special flood hazard area indicated by the 100 year flood as identified by the U.S. Federal Emergency Management Agency Boundary Map #48491C0455F for Williamson County, Effective Date December 20, 2019.

Existing Drainage Conditions

The site is broken up into five (5) existing drainage areas that outfall at point confluence A, B, C and D. Existing drainage area 2, 4, and 5 accounts for the onsite runoff while drainage area's 1 and 3 account for the of offsite. Runoff from EDA-1 flows south to the point of confluence A while 3 follows the Heritage Grove Commercial flow patterns proposed in site plan 1783-001. The approach taken for the existing conditions of this subdivision tract is to maintain the design peak flows to assure the downstream storm infrastructure can adequately convey the runoff and that the major point of confluences is not adversely affected.

Proposed Development

The proposed drainage areas take into account the additional impervious cover. Due to the increase, a detention pond was proposed to accommodate the higher CN value as well as flows. Drainage areas PDA-01, 02, and 03 drain to points of confluence A while PDA-04 and 05 drains to points B and C respectively. Each of these point of confluences accounts for the runoff from all the contributing basins as well the detention pond located within each basin. Lots contained in PDA 3 will sheet flow off the back of the lot and bypass the detention pond. Per TCEQ guidelines, the pond located within PDA-02 is over treating to accommodate for the drainage areas that sheet flow away from the site and do not convey to the pond. All points of confluence are analyzed in the fully developed condition. In all analyzed storm events, 2-year, 10-year, 25-year, and 100-year, no Point of Confluence increased in peak run-off in the developed condition.

FACTORS AFFECTING SURFACE WATER QUALITY

No industrial associated activity discharges are expected for this proposed residential development site. Surface water quality can be affected by disturbance during construction and by development after construction. Soil disturbance from clearing and grubbing and cut / fill operations can lead to discharge of sediment unless adequate temporary erosion control measures are in place. For this project, the use of silt fence, construction entrances, and rock berms will prevent sediment from leaving the site. Siltation collected by the control measures will be cleaned from fences, berms, etc. on a routine schedule as outlined in the SWPPP and contract specifications.

During construction, surface water quality may also be affected by a spill of hydrocarbons or other hazardous substances used in construction. The most likely instances of a spill of hydrocarbons or hazardous substances are:

1. Refueling construction equipment.
2. Oil and grease from the asphalt pavement and vehicle traffic.
3. Performing operator-level maintenance, including adding petroleum, oils, or lubricants.
4. Normal silt build-up.
5. Unscheduled or emergency repairs, such as hydraulic fluid leaks.
6. Trash with becomes loose from subdivision residents.
7. Fertilizers used in the landscaping around the apartment buildings.

Every effort will be taken to be cautious and prevent spills. In the event of a fuel or hazardous substance spill as defined by the Reportable Quantities Table 1 (page 3) of the TCEQ's Small-Business Handbook for Spill Response (RG-285, June 1997), the contractor is required to clean up the spill and notify the TCEQ as required in RG-285. During business hours report spills to the TCEQ's Austin Regional Office at (512) 339-2929, after business hours call 1-800-832-8224, the Environmental Response Hotline or (512) 463-7727, the TCEQ Spill Reporting Hotline, which is also answered 24 hours a day.

After construction is complete, impervious cover for the tract of land is the major reason for degradation of water quality. Impervious cover includes the building foundation, street pavement and concrete sidewalks. Oil and fuel discharge from vehicles is anticipated. The proposed permanent BMPs on this project will help mitigate these occurrences. A total of 15.29 acres of the site will be treated with 95% of impervious cover to compensate for the offsite drainage area that will not be conveyed to the pond.

VOLUME AND CHARACTER OF STORMWATER

The increase in impervious cover and vehicular traffic associated with this development will increase the pollutants which could potentially drain into the stormwater runoff. Runoff contaminants will most likely include oil and grease from vehicular use on the proposed public roadways as well as lawn fertilizers and clippings (please reference Attachment D of this section for more information).

A total of 152 single family houses will be proposed on site with a projected area of approximately 666,200 square feet for buildings and associated pavement/sidewalks. The character or quality of the stormwater runoff is expected to be typical off any other medium sized office or retail development, with increased suspended solids in the post-construction conditions as predicted by TCEQ methodology and rational in TCEQ document RG-348. Suspended solids from buildings, pavement, vehicles and landscaping are expected.

The volume of the stormwater runoff is also expected to increase as the impervious cover rises with the subsequent increase in runoff coefficients.

Due to the natural topography of the subject site, the proposed grading and drainage plan incorporates one batch detention water quality pond (BMP) to capture the runoff from the impervious cover and adjacent areas. The proposed batch detention pond has been designed using the TCEQ TSS Removal Calculations Spreadsheet. The spreadsheet can be found on the "WATER QUALITY POND DETAILS" sheets in the attached approved plan set.

Flows from the subject site were calculated using the rational method. The existing-development runoff volume for drainage areas EDA-01 and EDA-02 at POA-A combined is approximately Q2 = 34.85 cfs (cubic feet per second), Q25 = 114.93 cfs, and Q100 = 169.32 cfs. EDA-03/POA-B, EDA-04/POA-C, and EDA-05/POA-D as well as the previously mentioned EDA-01/EDA-02/POA-A are shown in the chart below:

EXISTING CONDITIONS

DRAINAGE AREA	AREA (AC.)	IMPERVIOUS COVER	CN (COMPOSITE)	TC (MIN)*	Q_2 (CFS)	Q_{10} (CFS)	Q_{25} (CFS)	Q_{100} (CFS)
EDA-01	10.86	42%	84	28.0	10.67	21.10	29.30	44.74
EDA-02	27.76	2%	77	22.3	28.58	74.39	102.50	149.73
POA-A					**34.85**	**85.23**	**114.93**	**169.32**
EDA-03	12.66	46%	87	18.5	12.98	34.78	47.72	64.83
POA-B					**12.98**	**34.78**	**47.7**	**64.8**
EDA-04	1.03	0%	77	28.5	0.99	2.61	3.60	5.27
POA-C					**0.99**	**2.61**	**3.60**	**5.27**
EDA-05	2.10	0%	77	24.8	2.02	5.33	7.35	10.75
POA-D					**2.02**	**5.33**	**7.35**	**10.75**

***MINIMUM TIME OF CONCENTRATION USED FOR DESIGN = 5 MINUTES**

The proposed development runoff volume for drainage areas PDA-01, PDA-02, and PDA-03 combined at POA-A is approximately Q2 = 29.4 cfs (cubic feet per second), Q25 = 104.2 cfs, and Q100 = 148 cfs leaving the pond. The batch detention pond was sized for an overall impervious cover percentage of 55%. The overall site impervious cover will be no more than 16.74 acres or 55% of the gross 30.434-acre site. Therefore, proposed runoff volumes, post-detention, will be less than allowable. The previously mentioned drainage areas as well as the others are provided in the table below:

PROPOSED CONDITIONS								
DRAINAGE AREA	**AREA (AC.)**	**IMPERVIOUS COVER**	**CN (COMPOSITE)**	**TC (MIN)***	**Q_2 (CFS)**	**Q_{10} (CFS)**	**Q_{25} (CFS)**	**Q_{100} (CFS)**
PDA-01	10.86	42%	84	22.0	10.67	21.10	29.30	44.74
PDA-02	29.10	50%	86	20.6	49.99	102.54	132.70	182.38
PDA-03	0.31	20%	88	9.6	0.49	1.16	1.56	2.23
POA-A					**29.8**	**81.7**	**108.9**	**154.6**
PDA-04	12.98	51%	88	18.5	12.15	29.12	39.17	55.52
POA-B					**12.15**	**29.12**	**39.17**	**55.52**
PDA-05	0.75	20%	81	24.0	0.90	2.14	2.87	4.11
POA-C					**0.90**	**2.14**	**2.87**	**4.11**
***MINIMUM TIME OF CONCENTRATION USED FOR DESIGN = 5 MINUTES**								

SUITABILITY LETTER FROM AUTHORIZED AGENT

No on-site sewage facilities are proposed with this project; and therefore, a suitability letter from an authorized agent is not applicable.

ALTERNATIVE SECONDARY CONTAINMENT METHODS

Not applicable.

AST CONTAINMENT STRUCTURE DRAWINGS

Not applicable.

20% OR LESS IMPERVIOUS COVER WAIVER

Not applicable.

BMPS FOR UPGRADIENT STORMWATER

Not applicable.

BMPS FOR ON-SITE STORMWATER

For the Water Quality BMP at this site a Batch detention system is proposed as specified in the TCEQ Edwards Aquifer Technical Guidelines manual. TSS Removal Calculations provided below.

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Pulte
Date Prepared: 9/6/2019

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Williamson	
Total project area included in plan * =	30.69	acres
Predevelopment impervious area within the limits of the plan * =	0.02	acres
Total post-development impervious area within the limits of the plan* =	15.64	acres
Total post-development impervious cover fraction * =	0.51	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	13596	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 1

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	30.69	acres
Predevelopment impervious area within drainage basin/outfall area =	0.02	acres
Post-development impervious area within drainage basin/outfall area =	14.55	acres
Post-development impervious fraction within drainage basin/outfall area =	0.47	
$L_{M\ THIS\ BASIN}$ =	12646	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = 91 percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

where:

A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C = 30.69 acres

A_I =	**15.64**	acres
A_P =	**15.05**	acres
L_R =	**15997**	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ =	**12646**	lbs.
F =	**0.79**	

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	**1.04**	inches
Post Development Runoff Coefficient =	**0.36**	
On-site Water Quality Volume =	**42044**	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

Off-site area draining to BMP =	**10.86**	acres
Off-site Impervious cover draining to BMP =	**4.56**	acres
Impervious fraction of off-site area =	**0.42**	
Off-site Runoff Coefficient =	**0.32**	
Off-site Water Quality Volume =	**12977**	cubic feet
Storage for Sediment =	**11004**	
Total Capture Volume (required water quality volume(s) x 1.20) =	**66026**	cubic feet

1.51573993

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

22. Batch Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin =	**NA**	cubic feet

BMPS FOR SURFACE STREAMS

Silt fence will be utilized as the temporary BMP along a few key locations within the site. As shown in the approved E&S plan, silt fence will be placed along or near almost the entire property line to filter offsite runoff, more silt fence will be added on the south end of the proposed road that runs through the property to prevent silt from entering the work site, and silt fence will also be added on the downstream end of all the offsite improvements for the road and entry drive improvements. The storm water runoff typically runs parallel to the proposed silt fence to provide the most effective capture of runoff silts.

CONSTRUCTION PLANS

Construction Plans have been included with this application. Please see the attached plan set.

INSPECTION, MAINTENANCE, REPAIR AND RETROFIT PLAN

The inspection and maintenance plan outlines the procedures necessary to maintain the performance of the Permanent Best Management Practices for this project. It should be noted that the plan provides guidelines that may have to be adjusted dependent on site specific and weather-related conditions.

It is the responsibility of the owner to provide the inspections and maintenance as outlined in the plan for the duration of the project. The owner will maintain this responsibility until it is assumed or transferred to another entity in writing. If the property is leased or sold, the responsibility for the maintenance will be required to be transferred through the lease agreement, binding covenants, closing documents, or other binding legal instrument.

Disposal of accumulated silt shall be accomplished following Texas Commission on Environmental Quality guidelines and specifications.

Maintenance records shall be kept on the installation, maintenance, or removal of items necessary for the proper operation of the facilities. All inspections shall be documented.

Inspection and Maintenance For BMPs

1. The irrigation system, including pumps, should be inspected and tested (or observed while in operation) to assure proper operation at least 6 times annually. Two of these inspections should occur during or immediately following wet weather. Any leaks, broken spray heads, or other malfunctions with the irrigation system should be repaired immediately.

2. The upper stage, side slopes, and embankment of a batch detention basin must be mowed regularly. Grass areas in and around basins must be mowed at least twice annually. Vegetation height should not exceed 18 inches. When mowing, a mulching mower should be used, or grass clippings should be caught and removed.

3. Vegetation must be maintained in the irrigation area such that it does not impede the spray of water from the irrigation heads. Tree and shrub trimmings and other large debris should be removed from the irrigation area.

4. Debris and litter will accumulate near the basin pump and should be removed during regular mowing operations and inspections. Particular attention should be paid to floating debris that can eventually clog the irrigation system.

5. Sedimentation will be removed from splitter box, basin, and wet wells at least two times per year (bi- annually) or when the depth reaches 3 inches. Debris and litter removal should occur during regular mowing operations.

6. The pond side slopes and embankment may periodically suffer from slumping and erosion. Regrading and revegetation' may be required to correct the problems.

7. During construction, the SWPPP will be followed and accurate records of inspections will take place.

An amended copy of this document will be provided to the Texas Commission on Environmental Quality within thirty (30) days of any changes in the following information.

Responsible Party: Stephen Ashlock, Pulte Homes of Texas LP
Mailing Address: 9401 Amberglen Blvd., Bldg I, Suite 150
City, State: Austin, Tx Zip: 78729
Telephone: 512-532-3355 Fax: _____

I, the owner, have read and understand the requirements of the attached Inspection and Maintenance Plan for the proposed Permanent Best Management Practices for my project. I acknowledge that I will maintain responsibility for the implementation and execution of the plan until the responsibility is transferred to or assumed by another party in writing through a binding legal instrument.

Signature of Responsible Party _____ Date 9/28/20

This Maintenance Plan is based on City of Austin Environmental Criteria Manual.

By: _____ Date 09/27/2020
Harrison M. Hudson, P.E.

Personnel Responsible for Inspections

The agent that performs the inspections should be knowledgeable of this general permit, familiar with the construction site, and knowledgeable of the SWPPP for the site. The contractor is to provide an inspector with a CPESC, CESSWI, or CISEC certification. Documentation of the inspector's qualifications is to be included in the attached Inspector Qualifications Log.

Inspection Schedule

The primary operator is required to choose one of the two inspections listed below.

☐ **Option 1:** Once every seven calendar days. If this alternative schedule is developed, then the inspection must occur regardless of whether or not there has been a rainfall event since the previous inspection.

☐ **Option 2:** Once every 7 calendar days and within 24 hours of the end of a storm event of two inches or greater.

The inspections may occur on either schedule provided that documentation reflects the current schedule and that any changes to the schedule are conducted in accordance with the following provisions: the schedule may be changed a maximum of one time each month, the schedule change must be implemented at the beginning of a calendar month, and the reason for the schedule change must be documented (e.g., end of “dry” season and beginning of “wet” season).

If option 2 is the chosen frequency of inspections a rain gauge must be properly maintained on site or the storm event information from a weather station that is representative of the site location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, proper documentation of the total rainfall measured for that day must be recorded.
Personnel provided by the permittee must inspect:

- disturbed areas of the construction site that have not been finally stabilized;
- areas used for storage of materials that are exposed to precipitation;
- structural controls (for evidence of, or the potential for, pollutants entering the drainage system);
- sediment and erosion control measures identified in the SWP3 (to ensure they are operating correctly); and
- locations where vehicles enter or exit the site (for evidence of off-site sediment tracking).

Reductions in Inspection Frequency

Where sites have been finally or temporarily stabilized or where runoff is unlikely due to winter conditions (e.g. site is covered with snow, ice, or frozen ground exists), inspections must be conducted at least once every month. In arid, semi-arid, or drought-stricken areas, inspections must be conducted at least once every month and within 24 hours after the end of a storm event of 0.25 inches or greater. A record of the total rainfall measured, as well as the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections in the attached Rain Gauge Log.

In the event of flooding or other uncontrollable situations which prohibit access to the inspection sites, inspections must be conducted as soon as access is practicable.

Inspection Report Forms

Use the Inspection Report Forms given as a checklist to ensure that all required areas of the construction site are addressed. There is space to document the inspector's name as well as when the inspections regularly take place. The tables will document that the required area was inspected. (If there were any areas of concern, briefly describe them in this space with a more detailed description in the narrative section. Use the last table to document any discharges found during the inspections).
Describe how effective the installed BMPs are performing. Describe any BMP failures that were noted during the investigation and describe any maintenance required due to the failure. If new BMPs are needed as the construction site changes, the inspector can use the space at the bottom of the section to list BMPs to be implemented before the next inspection.

Describe the inspector's qualifications, how the inspection was conducted, and describe any areas of non-compliance in detail. If an inspection report does not identify any incidents of non-compliance, then it must contain a certifying signature stating that the facility or site is in compliance. The report must be signed by a person and in a manner required by 30 TAC 305.128. There is space at the end of the form to allow for this certifying signature.

Whenever an inspection shows that BMP modifications are needed to better control pollutants in runoff, the changes must be completed within seven calendar days following the inspection. If existing BMPs are modified or if additional BMPs are needed, you must describe your implementation schedule, and wherever possible, make the required BMP changes before the next storm event.

The Inspection Report Form functions as the required report and must be signed in accordance with TCEQ rules at 30 TAC 305.128.

Corrective Action

Personnel Responsible for Corrective Actions

Both Primary and Secondary Operators are responsible for maintaining all necessary Corrective Actions. If an individual is specifically identified as the responsible party for modifying the contact information for that individual should be documented in the attached Inspector Qualifications Log.

Corrective Action Forms

The Temporary BMPs must be modified based on the results of inspections, as necessary, to better control pollutants in runoff. Revisions must be completed within seven (7) calendar days following the inspection. If existing BMPs are modified or if additional BMPs are necessary, an implementation schedule must be described in the attached forms and wherever possible those changes implemented before the next storm event. If implementation before the next anticipated storm event is impracticable, these changes must be implemented as soon as practicable. Actions taken as a result of inspections must be properly documented by completing the corrective action forms given.

Schedule of Interim and Permanent Soil Stabilization

Construction practices shall disturb the minimal amount of existing ground cover as required for land clearing, grading, and construction activity for the shortest amount of time possible to minimize the potential of erosion and sedimentation from the site. Existing vegetation shall be maintained and left in place until it is necessary to disturb for construction activity. For this project the following stabilization practices will be implemented:

1. Hydraulic Mulch and Seeding: Disturbed areas subject to erosion shall be stabilized with hydraulic mulch and/or seeded and watered to provide interim stabilization. For areas that are not to be sodded as per the project landscaping plan, a minimum of 85% vegetative cover will be established to provide permanent stabilization.
2. Sodding and Wood Mulch: As per the project landscaping plan, Sodding and wood mulch will be applied to landscaped areas to provide permanent stabilization prior to project completion.

Records of the following shall be maintained:

a) The dates when major grading activities occur;
b) The dates when construction activities temporarily or permanently cease on a portion of the site; and
c) The dates when stabilization measures are initiated.

Stabilization measures must be initiated as soon as practical in portions of the site where construction activities have temporarily or permanently ceased, and except as provided in the following, must be initiated no more that fourteen (14) days after the construction activity in that portion of the site has temporarily or permanently ceased:

Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practical.

Where construction activity on a portion of the site is temporarily ceased and earth disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures do not have to be initiated on that portion of the site.

In arid areas (areas with an average rainfall of 0-10 inches), semiarid areas (areas with an average annual rainfall of 10 to 20 inches), and areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonably arid conditions, stabilization measures must be initiated as soon as practical.

Maintenance

Below are some maintenance practices to be used to maintain erosion and sediment controls:

- All measures will be maintained in good working order. The operator should correct any damage or deficiencies as soon as practicable after the inspection, but in no case later than seven (7) calendar days after the inspection.
- BMP Maintenance (as applicable)
- Sediment must be removed from sediment traps and sedimentation ponds no later than the time that design capacity has been reduced by 50%. For perimeter controls such as silt fences, berms, etc., the trapped sediment must be removed before it reaches 50% of the above-ground height.
- Silt fence will be inspected for depth of sediment, tears, to see of the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
- Drainage swale will be inspected and repaired as necessary.
- Inlet control will be inspected and repaired as necessary.
- Check dam will be inspected and repaired as necessary.
- Straw bale dike will be inspected and repaired as necessary.
- Diversion dike will be inspected and any breaches promptly repaired.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.
- If sediment escapes the site, accumulations must be removed at a frequency that minimizes off-site impacts, and prior to the next rain event, if feasible. If the permittee does not own or operate the off-site conveyance, then the permittee must to work with the owner or operator of the property to remove the sediment.
- Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.

To maintain the above practices, the following will be performed:

- Maintenance and repairs will be conducted before the next anticipated storm event or as necessary to maintain the continued effectiveness of storm water controls. Following an inspection, deficiencies should be corrected no later than seven (7) calendar days after the inspection.

Inspector Qualifications Log*

Inspector Name: _____
Qualifications (Check as appropriate and provide description):
□ Training Course _____
□ Supervised Experience _____
□ Other _____

Inspector Name: _____
Qualifications (Check as appropriate and provide description):
□ Training Course _____
□ Supervised Experience _____
□ Other _____

Inspector Name: _____
Qualifications (Check as appropriate and provide description):
□ Training Course _____
□ Supervised Experience _____
□ Other _____

Inspector Name: _____
Qualifications (Check as appropriate and provide description):
□ Training Course _____
□ Supervised Experience _____
□ Other _____

Inspector Name: _____
Qualifications (Check as appropriate and provide description):
□ Training Course _____
□ Supervised Experience _____
□ Other _____

Inspector Name: _____
Qualifications (Check as appropriate and provide description):
□ Training Course _____
□ Supervised Experience _____
□ Other _____

* The agent that performs the inspections should be knowledgeable of this general permit, familiar with the construction site, and knowledgeable of the SWPPP for the site. The contractor is to provide an inspector with a CPESC, CESSWI, or CISEC certification.

Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Construction Activity Sequence Log

Name of Operator	Projected dates Month/year	Activity Disturbing Soil clearing, excavation, etc.	Location on-site where activity will be conducted	Acreage being disturbed

*Construction activity sequences for linear projects may be conducted on a rolling basis. As a result, construction activities may be at different stages at different locations in the project area. The Contractor is required to complete and update the schedule and adjust as necessary.

Stormwater Control Installation and Removal Log

Stormwater Control	Location On-Site	Installation Date	Removal Date

Stabilization Activities Log

Date Activity Initiated	Description of Activity	Description of Stabilization Measure and Location	Date Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated

Stabilization and erosion control practices may include, but are not limited to: establishing temporary or permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, and protecting existing trees and vegetation. List practices used where they are located, when they will be implemented, and whether they are temporary (interim) or permanent.

Inspection Frequency Log

Date	Frequency Schedule and Reason for Change

Rain Gauge Log

Date	Location of Rain Gauge	Gauge Reading

General Information					
Name of Project		**Tracking No.**		**Inspection Date**	
Inspector Name, Title & Contact Information					
Present Phase of Construction					
Inspection Location (if multiple inspections are required, specify location where this inspection is being conducted)					

Inspection Frequency

Standard Frequency: ☐ Weekly ☐ Every 14 days and within 24 hours of a 0.25" rain

Increased Frequency: ☐ Every 7 days and within 24 hours of a 0.25" rain

Reduced Frequency:

- ☐ Once per month (for stabilized areas)
- ☐ Once per month and within 24 hours of a 0.25" rain (for arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought)
- ☐ Once per month (for frozen conditions where earth-disturbing activities are being conducted)

Was this inspection triggered by a 0.25" storm event? ☐ Yes ☐ No

If yes, how did you determined whether a 0.25" storm event has occurred?

☐ Rain gauge on site ☐ Weather station representative of site. Specify weather station source:

Total rainfall amount that triggered the inspection (in inches)**:**

Unsafe Conditions for Inspection

Did you determine that any portion of your site was unsafe for inspection? ☐ Yes ☐ No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Condition and Effectiveness of Erosion and Sediment (E&S) Controls				
Type/Location of E&S Control	**Repairs or Other Maintenance Needed?**	**Corrective Action Required?**	**Date on Which Maintenance or Corrective Action First Identified?**	**Notes**
1.	☐Yes ☐No	☐Yes ☐No		
2.	☐Yes ☐No	☐Yes ☐No		
3.	☐Yes ☐No	☐Yes ☐No		
4.	☐Yes ☐No	☐Yes ☐No		
5.	☐Yes ☐No	☐Yes ☐No		
6.	☐Yes ☐No	☐Yes ☐No		
7.	☐Yes ☐No	☐Yes ☐No		
8.	☐Yes ☐No	☐Yes ☐No		
9.	☐Yes ☐No	☐Yes ☐No		
10.	☐Yes ☐No	☐Yes ☐No		

Condition and Effectiveness of Pollution Prevention (P2) Practices				
Type/Location of P2 Practices	**Repairs or Other Maintenance Needed?**	**Corrective Action Required?**	**Identification Date**	**Notes**
1.	☐Yes ☐No	☐Yes ☐No		
2.	☐Yes ☐No	☐Yes ☐No		
3.	☐Yes ☐No	☐Yes ☐No		
4.	☐Yes ☐No	☐Yes ☐No		
5.	☐Yes ☐No	☐Yes ☐No		
6.	☐Yes ☐No	☐Yes ☐No		
7.	☐Yes ☐No	☐Yes ☐No		
8.	☐Yes ☐No	☐Yes ☐No		
9.	☐Yes ☐No	☐Yes ☐No		
10.	☐Yes ☐No	☐Yes ☐No		

Stabilization of Exposed Soil			
Stabilization Area	**Stabilization Method**	**Have You Initiated Stabilization?**	**Notes**
1.		☐ YES ☐ NO If yes, provide date:	
2.		☐ YES ☐ NO If yes, provide date:	
3.		☐ YES ☐ NO If yes, provide date:	
4.		☐ YES ☐ NO If yes, provide date:	
5.		☐ YES ☐ NO If yes, provide date:	

Description of Discharges	
Was a stormwater discharge or other discharge occurring from any part of your site at the time of the inspection? ☐ Yes ☐ No **If "yes", provide the following information for each point of discharge:**	
Discharge Location	**Observations**
1.	Describe the discharge: At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐ Yes ☐ No If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:
2.	Describe the discharge: At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐ Yes ☐ No If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:
3.	Describe the discharge: At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐ Yes ☐ No If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:

Contractor or Subcontractor Certification and Signature
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." **Signature of Contractor or Subcontractor:** _____ **Date:** **Printed Name and Affiliation:** _____
Certification and Signature by Permittee
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." **Signature of Permittee or "Duly Authorized Representative":** _____ **Date:** **Printed Name and Affiliation:** _____

Kimley»Horn

Section A – Initial Report (Complete this section within 24 hours of discovering the condition that triggered corrective action)					
Name of Project		Tracking No.		Today's Date	
Date Problem First Discovered			Time Problem First Discovered		
Name and Contact Information of Individual Completing this Form					

What site conditions triggered the requirement to conduct corrective action:

☐ A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or 3

☐ The stormwater controls that have been installed and maintained are not effective enough for the discharge to meet applicable water quality standards

☐ A prohibited discharge has occurred or is occurring

Provide a description of the problem:

Deadline for completing corrective action (*Enter date that is either: (1) no more than 7 calendar days after the date you discovered the problem, or (2) if it is infeasible to complete work within the first 7 days, enter the date that is as soon as practicable following the 7th day)*:

If your estimated date of completion falls after the 7-day deadline, explain (1) why you believe it is infeasible to complete work within 7 days, and (2) why the date you have established for making the new or modified stormwater control operational is the soonest practicable timeframe:

Section B – Corrective Action Progress

(Complete this section no later than 7 calendar days after discovering the condition that triggered corrective action)

Section B.1 – Why the Problem Occurred

Cause(s) of Problem (Add an additional sheet if necessary)	How This Was Determined and the Date You Determined the Cause
1.	1.
2.	2.
3.	3.

Section B.2 – Stormwater Control Modifications to be Implemented to Correct the Problem

List of Stormwater Control Modification(s) Needed to Correct Problem (Add an additional sheet if necessary)	Completion Date	SWPPP Update Necessary?	Notes
1.		☐Yes ☐No Date:	
2.		☐Yes ☐No Date:	
3.		☐Yes ☐No Date:	

Kimley»Horn

Section A – Initial Report (Complete this section within 24 hours of discovering the condition that triggered corrective action)					
Name of Project		Tracking No.		Today's Date	
Date Problem First Discovered			Time Problem First Discovered		
Name and Contact Information of Individual Completing this Form					

What site conditions triggered the requirement to conduct corrective action:
☐ A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or 3
☐ The stormwater controls that have been installed and maintained are not effective enough for the discharge to meet applicable water quality standards
☐ A prohibited discharge has occurred or is occurring

Provide a description of the problem:

Deadline for completing corrective action (*Enter date that is either: (1) no more than 7 calendar days after the date you discovered the problem, or (2) if it is infeasible to complete work within the first 7 days, enter the date that is as soon as practicable following the 7th day)*:

If your estimated date of completion falls after the 7-day deadline, explain (1) why you believe it is infeasible to complete work within 7 days, and (2) why the date you have established for making the new or modified stormwater control operational is the soonest practicable timeframe:

Section B – Corrective Action Progress
(Complete this section no later than 7 calendar days after discovering the condition that triggered corrective action)

Section B.1 – Why the Problem Occurred

Cause(s) of Problem (Add an additional sheet if necessary)	How This Was Determined and the Date You Determined the Cause
1.	1.
2.	2.
3.	3.

Section B.2 – Stormwater Control Modifications to be Implemented to Correct the Problem

List of Stormwater Control Modification(s) Needed to Correct Problem (Add an additional sheet if necessary)	Completion Date	SWPPP Update Necessary?	Notes
1.		☐Yes ☐No Date:	
2.		☐Yes ☐No Date:	
3.		☐Yes ☐No Date:	

Contractor or Subcontractor Certification and Signature

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: _____ **Date:**

Printed Name and Affiliation: _____

Certification and Signature by Permittee

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or "Duly Authorized Representative": _____ **Date:**

Printed Name and Affiliation: _____

PILOT-SCALE FIELD TESTING PLAN

Not applicable.

MEASURES FOR MINIMIZING SURFACE STREAM CONTAMINATION

During construction, standard erosion measures will be used as shown in the construction plans. Runoff from the construction site will be contained by a silt fence until construction is complete. Entry and exit from the site will be through a stabilized construction entrance. The proposed batch detention water quality pond system will minimize surface stream contamination by removing 91% of the potential pollutants.

After completion of the project, temporary erosion and sedimentation measures (silt fence and rock berm) will remain in place until vegetative cover is established. Details concerning the erosion/sedimentation protection plan can be found on the Erosion & Sedimentation Control Plans of the construction drawings attached.

SECTION 4:
ADDITIONAL FORMS

Storm Water Pollution Prevention Plan

Additional Forms
SWPPP

STORM WATER POLLUTION PREVENTION PLAN (SWP3)

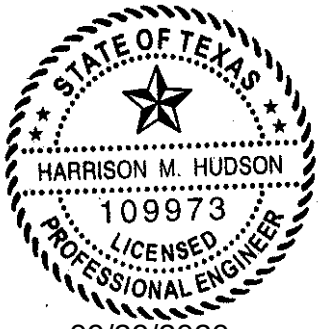
Reserve at North Fork

Leander, Texas

SEPTEMBER 2020

Project Owner:

Pulte Homes Of Texas, LP
9401 Amberglen Blvd., Bldg I, Suite 150
Austin, TX 78729
512-532-3355



09/29/2020

Prepared By:

Kimley-Horn
2600 Via Fortuna
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(512) 646-2237

Job No. 069312667

TBPE Firm #928

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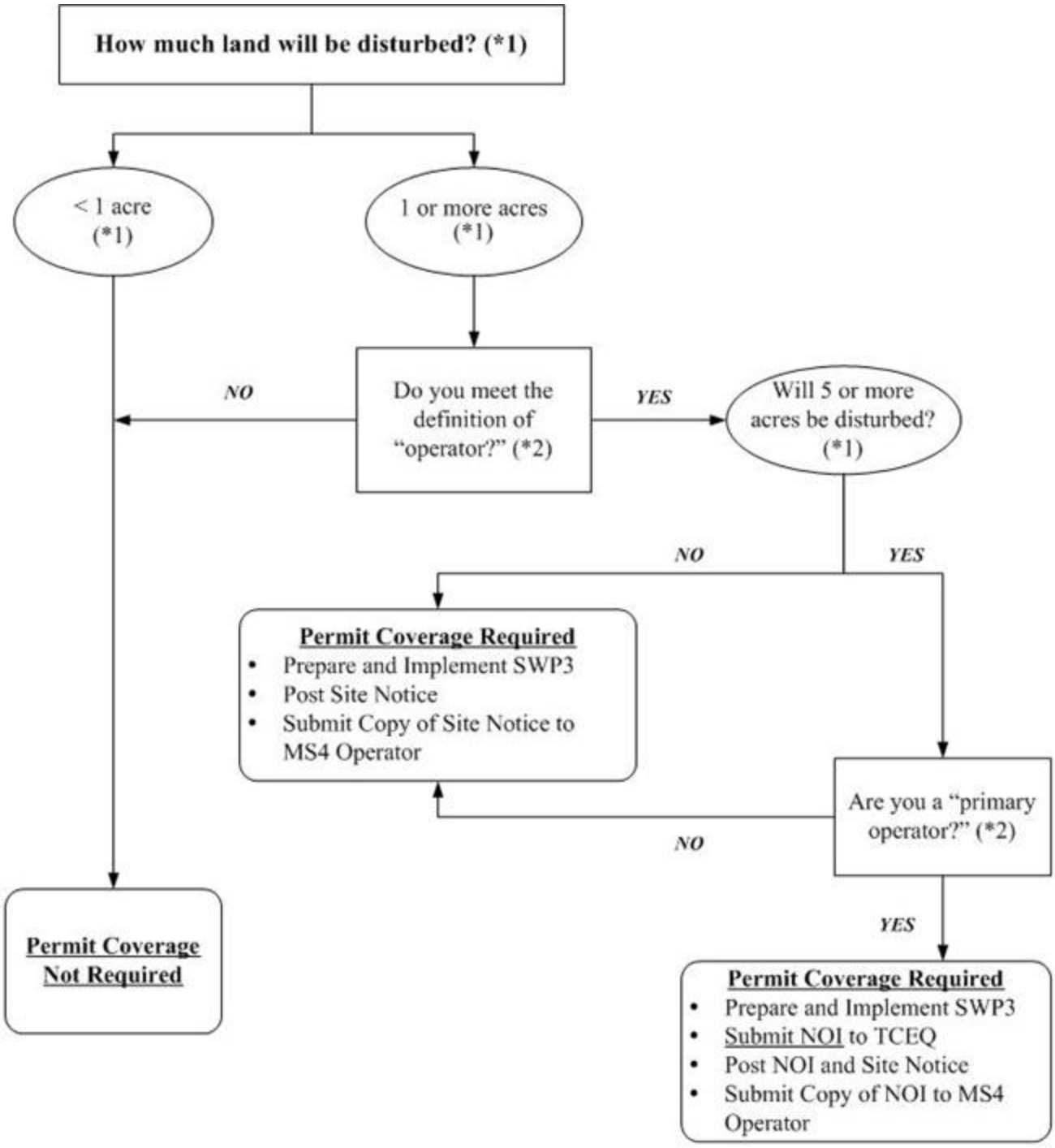
APPENDICES



(*1) ***To determine the size of the construction project, use the size of the entire area to be disturbed, and include the size of the larger common plan of development or sale, if the project is part of a larger project (refer to Part I.B., "Definitions," for an explanation of "larger common plan of development or sale").***

(*2) ***Refer to the definitions for "operator," "primary operator," and "secondary operator" in Part I., Section B. of this permit.***

STORM WATER POLLUTION PREVENTION PLAN REVISIONS

Provide a general description and document the date of any revisions to the storm water pollution prevention plan during the course of this construction project. Revisions may be necessary as a result of site inspections or because of a change in the circumstances of the construction project (such as schedule change or a modification in design).

The Storm Water Pollution Prevention Plan (SWP3) must be modified based on the results of inspections, as necessary, to better control pollutants in runoff. Revisions to the SWP3 must be completed within seven (7) calendar days following the inspection. If existing best management practices (BMPs) are modified or if additional BMPs are necessary, an implementation schedule must be described in the SWP3 and wherever possible those changes implemented before the next storm event. If implementation before the next anticipated storm event is impracticable, these changes must be implemented as soon as practicable.

REVISION (Refer to attachments if necessary)	DATE	SIGNATURE

1.0 INTRODUCTION

On March 10, 2003, responsibility for the administration of storm water protection associated with construction activities in Texas was delegated by the U.S. Environmental Protection Agency (EPA) to the Texas Commission on Environmental Quality (TCEQ). The Texas Pollutant Discharge Elimination System (TPDES) program in Texas meets or exceeds the National Pollutant Discharge Elimination System (NPDES) standards established on a federal level. This SWP3 has been developed in accordance with the TPDES requirements. Additional local requirements may apply and this SWP3 should be updated accordingly (Appendix O).

The purpose of the SWP3 is to provide guidelines for preventing or minimizing sediment and other pollutants that may originate on the site from flowing into municipal storm systems or jurisdictional waters during the construction period. This plan also addresses the principal activities known to disturb significant amounts of ground surface during construction. Stabilization measures must begin within fourteen (14) days of stoppage of construction activities (Appendix I). The permit coverage requirements terminate when areas disturbed for this project reach full stabilization (i.e., when disturbed areas are paved or achieve 70 percent native background vegetative coverage). Revisions to this plan will be made as necessary to accurately reflect project activities and storm water pollution prevention measures.

The storm water management controls included in this SWP3 focus on providing control of pollutant discharges with practical approaches that use readily available techniques, expertise, materials, and equipment. The necessary forms for implementing the SWP3 are found in the appendices of this document, including the Inspector's Qualifications, Inspection Form, Notice of Intent (NOI), Notice of Termination (NOT), and construction site notice. The SWP3 must be implemented prior to the start of construction activities.

The Project Owner's and the Contractor's roles and responsibilities for implementation and maintenance of the elements of the SWP3 are shown in a checklist in Appendix F of this document. Appendix F also includes a description of primary and secondary operators, along with associated responsibilities. The Project Owner and each Contractor must complete the checklist in Appendix F and sign the included certification statement. The certification statement indicates that each operator understands and accepts their roles and responsibilities with respect to storm water pollution prevention for this project.

A. Project Name and Location

Reserve at North Fork– Leander, Williamson County, Texas (See Appendix A for a project location map).

B. Owner Information

Name: Pulte Homes of Texas, LP
Address: 9401 Amberglen Blvd., Bldg I, Suite 150
Austin, Tx 78729
Representative: Stephen Ashlock
Title: Vice President of Land Development
Telephone: 512-532-3355
Fax: _____

C. Contractor Information

Name: _____
Address: _____
_____
Representative: _____
Title: _____
Telephone: _____
Fax: _____

D. Subcontractor Information

Name: _____
Address: _____
_____
Representative: _____
Title: _____
Telephone: _____
Fax: _____

Name: _____
Address: _____
_____
Representative: _____
Title: _____
Telephone: _____
Fax: _____

E. Discharges Eligible for Authorization

The general permit for construction activities allows for storm water discharges from construction activities, construction support activities, and authorized non-storm water discharges. Under the general permit, construction support activities include, but are not limited to:

- concrete and asphalt batch plants,
- rock crushers,
- equipment staging areas,
- material storage yards,
- material borrow areas, and
- excavated material disposal areas.

Storm water discharges from these construction support activities are authorized under the general permit for construction activities provided:

- the activity is located within one mile of the permitted construction site and is directly supporting the construction activities,
- the SWP3 for the permitted construction activities is developed to include the controls and measures to reduce erosion and discharge of pollutants in storm water runoff from the construction support activities, and

- the construction support activities either do not operate beyond the completion date of the construction activity or, at the time that they do, are authorized under separate Texas Pollutant Discharge Elimination System (TPDES) authorization.

The following non-storm water discharges are also authorized under the general permit for construction activities:

- Discharges from firefighting activities,
- Uncontaminated fire hydrant flushings,
- Water from routine external washing of vehicles, the external portion of buildings or structures, and pavement (where detergents and soaps are not used),
- Uncontaminated water used to control dust,
- Potable water sources, including waterline flushings,
- Uncontaminated air conditioning condensate,
- Uncontaminated groundwater or spring water, and
- Lawn watering and similar Irrigation drainage.

Part II.A.3 of the general permit contains additional information and requirements for non-storm water discharges. Discharges of storm water runoff from concrete batch plants may be authorized provided that the benchmark sampling and associated requirements located in Part V of the general permit are met. The wash out of concrete trucks associated with off-site facilities may be conducted in accordance with the requirements of Part V of the general permit. The Operator will be responsible for updating the SWP3 to meet Part V requirements, if applicable. A non-storm water discharge inventory is located in Appendix L.

F. Obtaining Coverage under the General Permit

Construction activities, including the activities associated with this project, disturbing five (5) acres or more (definition of a large construction activity) are required to comply with the following requirements of the general permit to obtain permit coverage:

a) Develop a SWP3 according to the provisions of the general permit that covers either the entire site or all portions of the site for which the applicant is the operator and implement that plan prior to commencing construction activities.

b) Primary operators must submit a NOI:

   1) at least seven days prior to commencing construction activities if mailing a paper NOI, or

   2) prior to commencing construction activities if utilizing electronic submittal.

   A copy of the NOI form is located in Appendix H. Instructions for NOI submittal relating to primary operator additions or changes are also located in Appendix H.

c) Post a site notice where it is safely and readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction. The site notice must be maintained until completion of the construction activity.

   1) For linear construction activities, the site notice must be placed in a publicly accessible location near where construction is actively underway. A copy of the construction site notice is located in Appendix H.

d) All primary operators must also post a copy of the signed NOI at the construction site in a location where it is readily available for viewing by the general public, local, state, and federal authorities prior to starting construction activities until completion of the construction activity. If multiple crews will be conducting construction activities under the general permit simultaneously, copies of the signed NOI should be posted at each separate construction site.

e) All primary operators must provide a copy of the signed NOI at least seven days prior to commencement of construction activities to any secondary operator and to the operator of any municipal separate storm sewer system (MS4) receiving construction site discharge. The names and addresses of all MS4 operators receiving a copy of the NOI are to be recorded in this SWP3 (Appendix H).

f) Secondary operators are regulated under the general construction permit but are not required to submit a NOI provided that:

   1) a primary operator(s) at the site has submitted a NOI, or

   2) another operator(s) is required to submit a NOI and the secondary operator has provided notification to the operator(s) of the need to obtain coverage.

   Additional information for secondary operators seeking alternative coverage is located in the general permit.

Questions about the TPDES construction permit program can be directed to the TCEQ Storm Water and General Permits Team at (512) 239-4515. A copy of the TPDES General Permit (TXR150000) for Storm Water Discharges from Construction Activities has been included in Appendix G for reference.

G. Notice of Change Letter

If the Operator becomes aware that he/she failed to submit any relevant facts, or submitted incorrect information in a NOI, the correct information must be provided to the TCEQ in a Notice of Change (NOC) letter within fourteen (14) days after discovery. In addition, if relevant information provided in the NOI changes, a NOC letter must be submitted to the TCEQ within fourteen (14) days of the change. A copy of the NOC must be provided to the operator of any MS4 receiving discharge from the construction activity. The names and addresses of all MS4 operators receiving a copy of the NOC must be included in this SWP3 (Appendix H).

H. Notice of Termination

Authorization under the general permit must be terminated by submitting a completed and signed NOT form provided in Appendix H. The NOT must be submitted to the TCEQ, and a copy of the NOT must be provided to the operator of any municipal separate storm sewer system (MS4) receiving the discharge within thirty (30) days after final stabilization has been achieved on all portions of the site that are the responsibility of the permittee, or another permitted contractor has assumed control over all areas of the site that have not been finally stabilized. The names and addresses of all MS4 operators receiving a copy of the NOT must be recorded in this SWP3 (Appendix H).

I. Termination of Coverage for Secondary Operators

Each operator that obtained authorization of the general permit without submitting a NOI must remove the site notice and complete the applicable portion of the notice related to removal of the notice. A copy of

the completed notice must be submitted to the operator of any MS4 receiving site discharge within 30 days of any the following conditions:

a) final stabilization has been achieved on all portions of the site that are the responsibility of the permittee,

b) a transfer of operational control has occurred, or

c) the operator has obtained alternative authorization under an individual TPDES permit or alternative TPDES general permit.

J. SWP3 Availability

This SWP3 must be retained on-site at the construction site, or if the site is inactive or does not have an on-site location to store the plan, a notice must be posted describing the location of the SWP3. This SWP3 must be made readily available at the time of an on-site inspection.

K. Hazardous Materials

The following potential pollutant sources may be present at the site due to the nature of the construction activities. An inventory of materials is located in Appendix L. Controls for potential pollutants are listed and described in Appendices C and D.

- Solvents
- Stains/paints
- Fuels
- Oils
- Grease
- Pesticides
- Fertilizer
- Sediment/total suspended solids
- Trash
- Paving
- Concrete curing compound
- Glue adhesives
- Joint compound
- Concrete, painting, and brick wash
- Excavation pump-out water
- Concrete

2.0 SITE DESCRIPTION

A. General Site Description

The construction site is located in Leander, which is located in Williamson County, Texas (Appendix A). The site covers 30.434-acres. The construction site is generally located 2000 feet west of US 183 and South of Heritage Grove Road. Coordinates for the site are approximately 30.59694°N and 97.86889°W (1983 North American Datum Coordinates).

B. Nature of Construction Activity

The purpose of the construction project is to construct a residential development subdivided into 152 single family lots with associated paving, grading, and utility improvements. The table in Appendix B should be updated to depict the anticipated schedule for the project.

C. Estimate of Total Site Area and Disturbed Area

The amount of area involved in the project is estimated to be 30.434-acres. The amount of area to be disturbed on the property is approximately 30.434-acres.

D. Storm Water Discharge Locations and Quality Data

Existing stormwater runoff flows generally from the north to south and currently discharges onto the adjacent property to the south, where it travels and flows into Brushy Creek. No data are available describing quality of storm water discharges from the site. Information will be added to this plan as it is received.

Once developed, stormwater is proposed to flow into inlets that tie into the storm sewer infrastructure within the roadways. The storm sewer infrastructure within has already been sized to accommodate for sites drainage runoff.

E. Information on Soil Types

A soils map showing the project site and surrounding area is included in Appendix A. The predominant soil types found on the project site are Denton silty clay (1 to 3 percent slopes), Doss silty clay (1 to 5 percent slopes), Eckrant cobbly clay (1 to 8 percent slopes), and Fairlie clay (1 to 2 percent slopes). A description of these soils is located in Appendix A (USDA, 2020).

F. Receiving Waters and Wetlands

The proposed onsite storm sewer system discharges into the storm sewer infrastructure within two tributaries of the San Gabriel River before entering the receiving waters of the San Gabriel River. This segment of Brushy Creek is listed for aquatic life, recreation and general use on the 2014 Texas Water Quality Inventory list. This creek is listed on the 2014 Texas 303(d) list as 1244_04 with the parameter of bacteria.

New sources or new discharges of the constituents of concern to impaired waters are not authorized by the general construction permit (unless otherwise allowable under 30 TAC Chapter 305 and applicable

state law). Impaired waters are those that do not meet applicable water quality standards and are listed on the EPA approved CWA 303(d) list. Pollutants of concern are those for which the water body is listed as impaired.

If discharges are expected to enter into a receiving water body located on the 303(d) list, constituents of concern are those for which the water body is listed as impaired. Discharges of the constituents of concern to impaired water bodies for which there is a total maximum daily load (TMDL) are not eligible for the general permit unless they are consistent with the approved TMDL. The receiving water does not have a known published TMDL. Permittees must incorporate the conditions and requirements applicable to their discharges, including monitoring frequency and reporting required by TCEQ rules, into this SWP3 in order to be eligible for coverage under the general permit.

It is unlikely that there are any wetlands on site. If any wetlands are identified on the site, the Operator should update this SWP3 accordingly.

G. Threatened and Endangered Species

Discharges that would adversely affect a listed endangered or threatened aquatic or aquatic-dependent species or its critical habitat are not authorized by the general construction permit, unless the requirements of the Endangered Species Act are satisfied. This project does not appear to contain suitable habitat for listed species in Williamson County, Texas. It is unlikely that the project has the potential to adversely affect a listed endangered or threatened species in Williamson County, Texas. If information regarding the presence of protected species changes the Operator should consult with the appropriate state or federal agency.

3.0 BEST MANAGEMENT PRACTICE MEASURES AND CONTROLS

In order to manage and reduce soil erosion, sediment loss, construction-generated waste, and construction-related toxic materials, BMPs must be utilized at the construction site. A variety of structural controls, soil stabilization techniques, storm water management controls, dust controls, waste disposal techniques, and "good housekeeping" practices that will be utilized in this construction project are documented in a checklist in Appendix C.

A detailed set of fact sheets for BMPs excerpted from the *Integrated Storm Water Design Manual for Construction* (North Central Texas Council of Governments, 2010) is located in Appendix D. These fact sheets show many examples of BMPs that may be appropriate for the site. If another BMP is being used, include the BMP information in Appendix D. The Contractor is responsible for selecting, implementing, and maintaining BMPs.

A. General Requirements

1. Erosion and sediment controls must be designed to retain sediment on-site to the extent practicable with consideration for local topography, soil type, and rainfall.

2. Control measures must be properly selected, installed, and maintained according to the manufacturer's or designer's specifications.

3. Controls must be developed to minimize the offsite transport of litter, construction debris, and construction materials.

B. Erosion Control and Stabilization Practices

1. Erosion control and stabilization practices may include but are not limited to: establishment of temporary or permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of existing trees and vegetation, slope texturing, temporary velocity dissipation devices, flow diversion mechanisms, and other similar measures.

2. Control measures must be properly selected, installed, and maintained according to the manufacturer's or designer's specifications.

    a) the dates when major grading activities occur,

    b) the dates when the construction activities temporarily or permanently cease on a portion of the site, and

    c) the dates when stabilization measures are initiated.

    A schedule of construction activities is located in Appendix B. Appendix I contains a record of temporary/permanent ceasing of construction activities.

3. Erosion control and stabilization measures must be initiated as soon as practicable in portions of the site where construction activities have temporarily ceased. Stabilization measures that provide a protective cover must be initiated as soon as practicable in portions of the site where construction activities have permanently ceased. These measures must be initiated no more than 14 days after

the construction activity in that portion of the site has temporarily or permanently ceased unless provided for in Part III.F.2.b.iii of the general permit.

C. Sediment Control Practices

1. Sites with Drainage Areas of Ten or More Acres

    a) A sedimentation basin is required, where feasible, for a common drainage location that serves an area with ten (10) or more acres disturbed at one time. Sedimentation basin information is located in Appendix N.

    b) At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area, and for those side slope boundaries deemed appropriate as dictated by individual site conditions.

2. Sites with Drainage Areas Less than Ten Acres

    a) Sediment traps and sediment basins may be used to control solids in storm water runoff for drainage locations serving less than ten (10) acres. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area, and for those side slope boundaries deemed appropriate as dictated by individual site conditions.

    b) Alternatively, a sediment basin may be utilized. Sedimentation basin information is located in Appendix N.

3. A description of any measures that will be installed during the construction process to control pollutants in storm water discharges that may occur after construction operations have been completed must be included in the SWP3. Permittees are only responsible for the installation and maintenance of storm water management measures prior to final stabilization of the site or prior to submission of an NOT.

4. Other required controls and BMPs are listed below. Best management practice checklists and fact sheets are included in Appendices C and D. A non-storm water discharge inventory is located in Appendix L.

    a) Permittees shall minimize, to the extent practicable, the off-site vehicle tracking of sediments and the generation of dust. Permittees must include a description of controls utilized to accomplish this requirement.

    b) Permittees must include a description of construction and waste materials expected to be stored on-site and a description of controls to minimize pollutants from these materials.

    c) Permittees must include a description of potential pollutant sources from areas other than construction (such as storm water discharges from dedicated asphalt plants and dedicated concrete batch plants), and a description of controls and measures that will be implemented at those sites to minimize pollutant discharges.

    d) Permittees shall place velocity dissipation devices at discharge locations and along the length of any outfall channel (i.e., runoff conveyance) to provide a non-erosive flow velocity from the structure to a water course, so that the natural physical and biological characteristics and functions are maintained and protected.

    e) Permittees shall design and utilize appropriate controls to minimize the offsite transport of suspended sediments and other pollutants if it is necessary to pump or channel standing water from the site.

f) Permittees shall ensure that all other required controls and BMPs comply with all the requirements of Part III.G of the TXR150000 general permit.

D. Erosion and Sediment Control Requirements

Any discharge regulated under the TXR150000 general permit must achieve, at a minimum, the following effluent limitations representing the degree of effluent reduction attainable by application of the best practicable control technology current available (BPT).

a) Erosion and sediment control: The permittee must design, install, and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants. Such controls must be designed, installed and maintained to meet minimum requirements outlined in section III.G.1. of the general permit, provided in Appendix G.

b) Soil stabilization: Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently creased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Temporary stabilization must be completed within 14 days after initiation of soil stabilization measures, and final stabilization must be achieved prior to termination of permit coverage.

c) Dewatering: Discharge from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited, unless managed by appropriate controls. Examples of appropriate controls are outlined below in Section 4.0 of this SWP3 document.

d) Pollution prevention measures: The permittee must design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. Such controls must be designed, installed, implemented, and maintained to meet requirements outlined in section III.G.4. of the general permit, provided in Appendix G.

e) Prohibited discharges: Certain discharges are not prohibited under the TXR150000 general permit. These prohibited discharges are outlined in section III.G.5. of the general permit, provided in Appendix G.

f) Surface outlets: When discharging from basins and impoundments, the permittee must utilize outlet structures that withdraw water from the surface, unless infeasible.

4.0 EXAMPLE PRACTICES

A. Example Stabilization Practices

1. Temporary Stabilization

   Top soil stock piles and disturbed portions of the site where construction activity temporarily ceases for at least 21 days will be stabilized with temporary seed and mulch no later than 14 days from the last construction activity in that area. Areas of the site which are to be paved will be temporarily stabilized until pavement can be applied.

2. Permanent Stabilization

   Disturbed portions of the site where construction activities permanently cease shall be stabilized with permanent seed no later than 14 days after the last construction activity.

B. Example Structural Practices

1. Interceptor Swale

   An interceptor swale is a small v-shaped or parabolic channel which collects runoff and directs it to a desired location. It can either have a natural grass lining or, depending upon slope and design velocity, a protective lining of erosion matting, stone or concrete. The interceptor swale can either be used to direct sediment-laden flow from disturbed areas into a controlled outlet or to direct “clean” runoff around disturbed areas. Since the swale is easy to install during early grading operations, it can serve as the first line of defense in reducing runoff across disturbed areas. As a method of reducing runoff across the disturbed construction area, it reduces the requirements of structural measures to capture sediment from runoff since the flow is reduced. By intercepting sediment-laden flow downstream of the disturbed area, runoff can be directed into a sediment basin or other BMP for sedimentation as opposed to long runs of silt fence, straw bales or other filtration method.

2. Silt Fence

   A silt fence consists of geotextile fabric supported by poultry netting or other backing stretched between either wooden or metal posts with the lower edge of the fabric securely embedded in the soil. The fence is typically located downstream of disturbed areas to intercept runoff in the form of sheet flow. Silt fence provides both filtration and time for sedimentation to reduce sediment and the velocity of the runoff. Properly designed silt fence is economical since it can be relocated during construction and reused on other projects. Silt fence is normally used as perimeter control located downstream of disturbed areas. It is only feasible for non-concentrated, sheet flow conditions.

3. Fiber Roll/Sediment Log

   Fiber rolls/sediment logs are tightly compacted tubular cylinders composed of straw, flax, coconut fiber, or other similar types of material wrapped with a fiber mesh. They must be secured with stakes. When installed at the base of an embankment or on a slope, fiber rolls are effective at controlling sediment and reducing erosion rates. They achieve this by intercepting storm water runoff, thereby reducing the velocity of the flow and dispersing concentrated runoff as sheet flows. Fiber rolls are

also water-permeable and are effective at trapping eroded sediment. It is important not to crush fiber rolls when they are installed. If more than one sock is placed in a row, the socks should be overlapped; not abutted.

4. Inlet Control

   Inlet protection consists of a variety of methods of intercepting sediment at low point inlets through the use of stone, filter fabric and other materials. This is normally located at the inlet, providing either detention or filtration to reduce sediment and floatable materials in storm water. Inlet protection is normally used as a secondary defense in site erosion control due to the limited effectiveness and applicability of the technique. It is normally used in new developments that include new inlets or roads with new curb inlets or during major repairs to existing roadways. Inlet protection has limited use in developed areas due to the potential for loading, traffic safety and pedestrian safety and maintenance problems. Inlet protection can reduce sediment in a storm sewer system by serving as a back system to onsite controls or by reducing sediment loads from controls with limited effectiveness such as straw bale dikes.

5. Check Dams

   Check dams are small barriers consisting of straw bales, rock, or earth berms placed across a drainage swale or ditch. They reduce the velocity of small concentrated flows, provide a limited barrier for sediment and help disperse concentrated flows, reducing potential erosion. Check dams are used for long drainage swales or ditches in which permanent vegetation may not be established and erosive velocities are present. They are typically used in conjunction with other techniques such as inlet protection, rip rap or other sediment reduction techniques. Check dams provide limited treatment. They are more useful in reducing flow to acceptable levels.

6. Erosion Control Mats

   An erosion control mat (ECM) is a geomembrane or biodegradable fabric placed over disturbed areas to limit the effects of erosion due to rainfall and runoff across barren soil. Erosion control mats are manufactured by a wide variety of vendors addressing a wide variety of conditions such as vegetation establishment and high velocity flow. Types of matting include organic (jute, straw) and synthetic (plastic and glass fiber) materials. Mats can provide both temporary and/or permanent stabilization for disturbed soil or barren areas. It is used for difficult areas to stabilize such as steep slopes, temporary or permanent drainage swales, embankments or high traffic (pedestrian) areas. Some mats are reusable, reducing the initial cost of the installation.

7. Stabilized Construction Entrance

   A stabilized construction entrance consists of a pad consisting of gravel, crushed stone, recycled concrete or other rock like material on top of geotextile filter cloth to facilitate the wash down and removal of sediment and other debris from construction equipment prior to exiting the construction site. For added effectiveness, a wash rack area can be incorporated into the design to further reduce sediment tracking. For long term projects, cattle guards or other type of permanent rack system can be used in conjunction with a wash rack. This directly addresses the problem of silt and mud deposition in roadways used for construction site access. Stabilized construction entrances are used primarily for sites in which significant truck traffic occurs on a daily basis. It reduces the need to remove sediment from streets. If used properly, it also directs the majority of traffic to a single

location, reducing the number and quantity of disturbed areas on the site and providing protection for other structural controls through traffic control.

8. Earth Dike

   An earth dike is constructed along the uphill perimeter of a site. A portion of the dike will divert run-on around the construction site. The remaining portion of the dike will collect runoff from the disturbed area and direct the runoff to the sediment basin.

9. Triangular Sediment Filter Dike

   A triangular sediment filter dike is a self-contained silt fence consisting of filter fabric wrapped around welded wire fabric shaped into a triangular cross section. While similar in use to a silt fence, the dike is reusable, sturdier, transportable, and can be used on paved areas in situations where it is impractical to install embedded posts for support. Triangular filter dikes are used in place of silt fence, treating sediment flow at the perimeter of construction areas and at the perimeter of the site. Also, the dikes can serve as stream protection devices by preventing sediment from entering the streams or as check dams in small swales. Triangular sediment filter dikes are especially useful for construction areas surrounded by pavement, where silt fence or hay bale installation is impracticable. Since they can be anchored without penetration (through the use of rock), pavement damage can be minimized. Triangular dikes are used to provide perimeter control by detaining sediment on a disturbed site with drainage that would otherwise flow onto adjacent properties. Triangular dikes also serve as sediment trapping devices when used in areas of sheet flow across disturbed areas or are placed along stream banks to prevent sediment-laden sheet flow from entering the stream. The dikes can be subjected to more concentrated flows and a higher flow rate than silt fence.

10. Sediment Basin

    Sediment basins are required, where feasible, for sites with drainage areas of ten (10) or more acres. Additional information for sedimentation basins is located in Appendix N.

11. Tree Protection

    Tree protection prevents the disturbance of existing trees and their roots on a construction site. Trees are not the same shape below ground as they are above, so it is difficult to predict the length or location of their roots. One common method used to identify the critical root zone is to define the tree's "drip line" – the area directly below the branches of the tree. Many roots extend beyond the longest branches a distance equal to two or more times the height of the tree. For this reason, it is recommended to protect as much of the area beyond the drip line as feasible. An example of tree protection is to tie continuous nylon string with two-foot tundra weight orange streamers to eight-foot minimum metal t-posts driven two feet into the ground. Four-foot minimum orange plastic fencing per manufacturer's recommendations will surround the critical root zone to keep equipment off the rooting area. If a fence cannot be erected, cushion the rooting area with six inches of wood chips, wood, or brick paths. Where root areas must be graded, cut large roots instead of tearing them with equipment.

C. Waste Control and Disposal

1. Waste Materials

   All waste materials will be collected and stored in a securely lidded metal dumpster rented from a local waste management company, which is a licensed solid waste management company. The dumpster will meet all local and any State solid waste management regulations. All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied periodically or more often if necessary, and the trash will be hauled to an appropriate waste management facility. No construction waste materials will be buried onsite. Staging areas for construction materials should have secondary containment. All personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted in the office trailer. The individual who manages the day-to-day site operations will be responsible for seeing that these procedures are followed.

2. Hazardous Waste

   All hazardous waste materials will be disposed of in the manner specified by local or State regulations or by the manufacturer. Site personnel will be instructed in these practices and the individual who manages day-to-day site operations will be responsible for seeing that these practices are followed.

3. Sanitary Waste

   All sanitary waste will be collected from the portable units periodically by a licensed sanitary waste management contractor, as required by local regulation.

4. Offsite Vehicle Tracking and Dust Control

   A stabilized construction entrance has been provided to help reduce vehicle tracking of sediments. The paved street adjacent to the site entrance will be swept to remove any excess mud, dirt or rock tracked from the site. Dump trucks hauling material from the construction site will be covered with a tarpaulin. If dust is visible when dump trucks are leaving the site due to construction activities, dust suppression techniques such as wetting the soil will be employed.

D. Timing of Controls/Measures

The contractor and the operator shall review the SWP3 requirements prior to beginning construction activities. The following is a sample erosion control sequence:

- Site Mobilization: Prior to any construction on the site a stabilized construction entrance shall be installed.
- Clearing and Rough Grading: Prior to any grading of the site, erosion control measures shall be installed. These controls may include but are not limited to silt fences, sedimentation ponds and vegetated swales. The installation is required to prevent sediment from leaving disturbed areas.
- Storm Drain Installation: In addition to maintaining the devices installed during initial grading, supplemental control measures will need to be installed. These devices will include devices shown on the plan such as storm drain inlet protection and sediment traps. Inlet protection devices prevent sedimentation from entering the inlet and subsequently, the storm sewer system

as well as the receiving water body. Other devices may be required as shown on the erosion control plan or requested by the inspector or operator.

- Installation of Public Utilities: Additional control measures are likewise not required during installation of public utilities. However, maintenance of existing control measures installed during previous phases must continue.
- Pavement Installation: In addition to maintaining the control measures installed during initial grading and storm drain installation phases, supplemental measures should be installed. Upon completion of paving and curb backfill operations, control measures should be installed behind curbs at handicap ramps and along parkways where sediment could enter streets and/or paved areas.
- Final Grading: Additional control measures are not required during final grading. However, maintenance of existing control measures installed during previous phases will continue.
- Building Construction: In addition to maintaining previously installed control measures, a strict policy will be enacted which minimizes vehicle traffic from entering non-paved areas. Construction materials will be unloaded from existing paved surfaces where possible, thereby preventing disturbing control measures already in place and reducing sediment tracking into paved areas. Areas where construction activity temporarily ceases for more than 21 days will be stabilized with a temporary seed and mulch within 14 days of the last disturbance. Once construction activity ceases permanently in an area, that area will be stabilized with permanent seed and mulch. After the entire site is stabilized, the accumulated sediment will be removed and the erosion control measures will be removed.

5.0 RELEASES OF REPORTABLE QUANTITIES

Because construction activities may handle certain hazardous substances over the course of the project, spills of these substances in amounts that equal or exceed Reportable Quantity (RQ) levels are a possibility. Material management practice guidelines are located in Appendix K.

EPA has issued regulations that define what reportable quantity levels are for oil and hazardous substances. These regulations are found at 40 CFR Part 110 Part 117, or 40 CFR Part 302. A list of RQs are included in Appendix M. If there is a RQ release during the construction period, then you must take the following steps:

- Notify TCEQ immediately at (800) 832-8224.
- Notify the National Response Center immediately at (800) 424-8802.
- Within fourteen (14) days, submit a written description of the release to TCEQ providing the date and circumstances of the release and the steps to be taken to prevent another release.
- Modify the pollution prevention plan to include the date of release, the circumstances leading to the release, and steps taken to prevent reoccurrence of the release.

6.0 STATE AND LOCAL PROGRAMS

The TPDES program meets or exceeds the NPDES standards established on a federal level. This SWP3 has been developed in accordance with the requirements of the TPDES requirements. Information for the City of Georgetown has been included in Appendix O. Additional local requirements may apply and this SWP3 should be updated accordingly.

Storm water from the project construction area discharges into the storm sewer system of the City of Georgetown (MS4).

Construction projects that discharge storm water to an MS4 are required to:

- submit a copy of the signed NOI to the operator of the MS4 at least two days prior to the commencement of construction activities,
- post a copy of the signed NOI and construction site notice at the project site at all times,
- submit a copy of any NOCs to the operator of the MS4,
- submit a copy of the NOT to the operator of the MS4, and
- keep and maintain a list of the names and address of MS4s that receive NOI, NOT, and/or NOC forms (Appendix H).

7.0 INSPECTION AND MAINTENANCE

A. Inspection Schedule

1. All disturbed areas, as well as all erosion and sediment control devices, will be inspected according to one of the following schedules:

    a) at least every seven (7) calendar days and within 24 hours after a rainfall of 0.25" or greater, or

    b) every seven (7) days on the same day of the week each week, regardless of whether or not there has been a rainfall event since the previous inspection.

2. Inspections may occur on either schedule provided that this SWP3 reflects the current schedule and that any changes are in accordance with the following:

    a) the schedule is changed a maximum of one time each month,

    b) the schedule change must be implemented at the beginning of a calendar month, and

    c) the reason for the schedule change must be documented in this SWP3 (an inspection schedule form is located in Appendix E).

B. Inspection Reports

1. Completed inspection reports (Appendix E) will include the following information:
    a) scope of the inspection,
    b) date of the inspection,
    c) name(s) of personnel making the inspection,
    d) reference to qualifications of inspection personnel,
    e) observed major construction activities, and
    f) actions taken as a result of the inspection.

2. All disturbed areas (on and off-site), areas for material storage locations where vehicles enter or exit the site, and all of the erosion and sediment controls that were identified as part of the SWP3 must be inspected. The inspection report must state whether the site was in compliance or identify any incidents of non-compliance. The report will be signed by the qualified inspector in accordance with the TPDES general permit and filed in the SWP3. A sample Inspection Report is included in Appendix E, along with an Inspector Qualification Form. All reports and inspections required by the general construction permit will be completed by a duly authorized representative. A copy of a Delegation of Signatories to Reports letter is included in Appendix J.

3. The operator should correct any damage or deficiencies as soon as practicable after the inspection, but in no case later than seven (7) calendar days after the inspection. If existing BMPs are modified or if additional BMPs are necessary, an implementation schedule must be described in the SWP3, and wherever possible, those changes implemented before the next storm event or as soon as practicable. A list of maintenance guidelines is included in Appendix E.

4. Inspection reports will be kept in the Operator's file, along with the SWP3, for at least three years from the date that the NOT is submitted to the TCEQ for the construction site.

C. Final Stabilization

Final stabilization of the construction site has been achieved when all soil disturbing activities at the site have been completed, and a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures. If a vegetative cover cannot be established, equivalent permanent stabilization measures (such as riprap, gabions, or geotextiles) can be employed. When these conditions have been met, BMPs can be removed from the construction area.

8.0 RECORD RETENTION

The permittee must retain the following records for a minimum period of three (3) years from the date that a NOT is submitted. Records include:

- A copy of the SWP3,
- All data used to complete the NOI, if an NOI is required for coverage under this general permit,
- All reports and actions required by this permit, including a copy of the construction site notice, and
- All records of submittal of forms submitted to the operator of any MS4 receiving the discharge and to the secondary operator of a large construction site, if applicable.

9.0 CONCRETE BATCH PLANTS (IF APPLICABLE)

A. Storm Water Runoff from Concrete Batch Plants

Discharges of storm water runoff from concrete batch plants may be authorized under the general permit provided that the requirements in Part IV of the permit are met (Appendix G). If discharges are not covered under the general permit, then discharges must be authorized under an alternative permit. Authorization for discharge or land disposal of concrete batch plant wastewater must be obtained under an alternative permit.

B. Benchmark Sampling Requirements

Operators of concrete batch plants must sample the storm water runoff from the concrete batch plant according to the requirements of the general permit. A table of benchmark monitoring values is located in Part IV.A. of the general permit. Analytical results that exceed a benchmark value are not a violation of the general construction permit. Results of analyses are indicators that modifications of the SWP3 should be assessed and may be necessary to protect water quality. Benchmark sampling records should be included in Appendix P.

C. Additional BMP and SWP3 Requirements

The following items are additional requirements for concrete batch plants. The Operator is responsible for updating the SWP3 as appropriate. Additional information for concrete batch plant requirements is located in Part IV of the general construction permit. Records and information for the concrete batch plant should be included in Appendix P.

1. A description of potential pollutant sources associated with the concrete batch plant must be kept in the SWP3.

2. The site map in Appendix A must include the following information:

    a) the location of all outfalls for storm water discharges associated with concrete batch plants;

    b) a depiction of the drainage area and the direction of flow to the outfall(s);

    c) structural controls used within the drainage area(s);

    d) the locations of the following areas associated with concrete batch plants that are exposed to precipitation: vehicle and equipment maintenance activity areas; areas used for the treatment, storage, or disposal of wastes; liquid storage tanks; material process and storage areas; and loading and unloading areas; and

    e) the locations of the following: any bag house or other dust control device(s); recycle/sedimentation pond, clarifier or other device used for the treatment of facility wastewater; areas with significant materials; and areas where major spills or leaks have occurred.

3. A list of materials handled at the concrete batch plant that may be exposed to storm water and that have a potential to affect the quality of storm water discharges associated with concrete batch plants must be kept in this SWP3.

4. A list of significant spills and leaks of toxic or hazardous pollutants that occurred in areas exposed to storm water and that drain to storm water outfalls associated with concrete batch plants must be developed, maintained, and updated.

5. A summary of existing storm water discharge sampling data must be maintained if available.

6. Good housekeeping measures must be developed and implemented in the area(s) associated with concrete batch plants.

7. Areas where potential spills that can contribute pollutants to storm water runoff, and the drainage areas from these locations must be identified. Include material handling procedures, storage requirements, and use of equipment information. Procedures for cleaning up spills must be identified and made available to the appropriate personnel.

8. Qualified facility personnel must be identified to inspect designated equipment and areas of the facility specified in this SWP3. Inspection frequency must be specified based upon a consideration of the level of concrete production, but must be a minimum of once per month while the facility is in operation. The inspection must take place while the facility is in operation and include all areas that are exposed to storm water at the site. Records of inspections must be maintained in Appendix P.

9. An employee training program must be developed to educate personnel. At a minimum, training must occur prior to the initiation of operation of the concrete batch plant.

10. A description of spills and similar incidents, plus additional information that is obtained regarding the quality and quantity of storm water discharges must be included with this SWP3.

11. Include a narrative consideration for reducing the volume of runoff from concrete batch plants by diverting runoff or otherwise managing runoff, including use of infiltration, detention ponds, retention ponds, or reusing of runoff.

12. At least once per year, one or more qualified personnel shall conduct a compliance evaluation of the plant. Evaluation requirements are listed in Part IV.B.3 of the general permit.

10.0 CONCRETE TRUCK WASH OUT (IF APPLICABLE)

The wash out of concrete trucks at the construction site is authorized, provided that the requirements in Part V of the general permit are met. Authorization is limited to the land disposal of wash out water from concrete trucks. Any other direct discharge of concrete production waste eater must be authorized under a separate general permit or individual permit.

A. Wash Out Requirements

1. Direct discharge of concrete truck wash out water to surface water in the state, including discharge to storm sewers, is prohibited by the general permit.

2. Concrete truck wash out water should be discharged to areas at the construction site where structural controls have been established to prevent direct discharge to surface waters, or to areas that have minimal slope that allow infiltration and filtering of wash out water to prevent direct discharge to surface waters. Structural controls may consist of temporary berms, temporary shallow pits, temporary storage tanks with slow rate release, or other reasonable measures to prevent runoff from the site.

3. Wash out of concrete trucks during rainfall events shall be minimized. The direct discharge of concrete wash out water is prohibited at all times, and the operator should have BMPs sufficient to prevent the discharge of concrete truck wash out as the result of rain.

4. The discharge of wash out water should not cause or contribute to groundwater contamination.

5. The Operator is responsible for showing concrete wash out areas on a map (Appendix A).

11.0 REFERENCES

North Central Texas Council of Governments (NCTCOG). 2010. Integrated Storm Water Management Technical Manual. http://iswm.nctcog.org/technical_manual.asp.

Texas Commission on Environmental Quality (TCEQ). 2014. "2014 Texas Water Quality Inventory and 303(d) List." [Online] (accessed on March 1, 2017). Available URL: https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014_basin12.pdf

United States Department of Agriculture (USDA). 2020. Soil Survey of Hays County, Texas. "Web Soil Survey." [Online] (accessed on January 22, 2020). Available URL: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

APPENDIX A

PROJECT MAPS

Map/Figure Notes:

- The Operator is solely responsible for selection, implementation, maintenance, and effectiveness of all BMPs.
- Best management practices shown on the attached figures are suggested controls only. The Operator will record BMPs (whether called out on the original SWP3 or not) directly on the site map.
- If information is not shown or if site conditions change from the attached figures, the Operator is responsible for updating the maps. The following information should be included on maps.
  - drainage patterns and approximate slopes anticipated after major grading activities,
  - areas where soil disturbance will occur,
  - locations of all major structural controls either planned or in place,
  - locations where stabilization practices are expected to be used,
  - locations of off-site material, waste, borrow, fill, or equipment storage areas,
  - surface waters (including wetlands) either adjacent or in close proximity,
  - locations where storm water discharges from the site directly to a surface water body or a MS4, and
  - vehicle wash areas
  - designated points on the site where vehicles will exit onto paved roads
- Where the amount of information required to be included on the map would result in a single map being difficult to interpret, the operator shall develop a series of maps that collectively include the required information.

IMAGES
XREFS
PLOTTED BY PISCIOTTO, GABRIELE 9/17/2020 1:41 PM
DWG NAME K:\SAU_CIVIL\069312667 PULTE LEANDER S 40\DOC\REPORTS\TCEQ\CZP\VICINITY XBORDER.DWG
LAST SAVED 9/17/2020 1:41 PM

SHEET 1 OF 1 SHEETS	Scale:	AS SHOWN	Vicinity Map
	Designed by:	GP	
	Drawn by:	GP	
	Checked by:	HMH	
	Date:	SEPT 2020	
	Project No.	069312667	

Storm Water Pollution Prevention Plan

PULTE LEANDER SOUTH 40
City of Leander, Williamson County, Texas

N W E S

Kimley»Horn

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

LEANDER QUADRANGLE
TEXAS
7.5-MINUTE SERIES

SITE LOCATION

LEANDER
ROUND ROCK
CEDAR PARK
AUSTIN
Walkerton
White Stone
Bagdad Cem
Davis Cem
Bonnet Cem
Upchurch Cem
Wells Cem
Whitley Cem
Soil Conservation Service Site 2 Reservoir
Soil Conservation Service Site 3 Reservoir
Soil Conservation Service Site 4 Reservoir
Soil Conservation Service Site 19a Reservoir
Hank Sasser Airport at Breakaway
South Fork San Gabriel River
North Fork San Gabriel River
S Fork Brushy Cr
Brushy Cr
S Brushy Cr
Lime Cr
Block House Cr
Chandler Br
Dry Fork Cr
Mayan Cr
Post Oak Cr
Rock House Cr
Spanish Oak Cr
Walsh Lake
Greasy Cafe
Deception
Brushy Creek Regional Trail
TRAVIS CO
WILLIAMSON CO

Produced by the United States Geological Survey

North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 14R

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery	NAIP,	September 2016 - November 2016
Roads	U.S. Census Bureau,	2015
Names	GNIS,	1979 - 2018
Hydrography	National Hydrography Dataset,	2002 - 2018
Contours	National Elevation Dataset,	2002
Boundaries	Multiple sources; see metadata file	2016 - 2017
Wetlands	FWS National Wetlands Inventory	1982

MN
GN
3°43′ 66 MILS
0°36′ 11 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
PU
Grid Zone Designation
14R

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

TEXAS
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 Liberty Hill
2 Leander NE
3 Georgetown
4 Nameless
5 Round Rock
6 Mansfield Dam
7 Jollyville
8 Pflugerville West

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

LEANDER, TX
2019

NSN 7643016396981
NGA REF NO. USGSX24K25238

Map Scale: 1:5,040 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 20, Sep 12, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 16, 2018—May 30, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DnB	Denton silty clay, 1 to 3 percent slopes	35.1	55.9%
DoC	Doss silty clay, moist, 1 to 5 percent slopes	3.8	6.0%
EaD	Eckrant cobbly clay, 1 to 8 percent slopes	3.6	5.7%
FaB	Fairlie clay, 1 to 2 percent slopes	20.3	32.4%
Totals for Area of Interest		**62.8**	**100.0%**

Williamson County, Texas

DnB—Denton silty clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2t26l
Elevation: 570 to 1,870 feet
Mean annual precipitation: 31 to 36 inches
Mean annual air temperature: 65 to 68 degrees F
Frost-free period: 220 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Denton and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Denton

Setting

Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Silty and clayey slope alluvium over residuum weathered from limestone

Typical profile

A - 0 to 14 inches: silty clay
Bw - 14 to 25 inches: silty clay
Bk - 25 to 33 inches: silty clay
Ck - 33 to 36 inches: gravelly silty clay
R - 36 to 80 inches: bedrock

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 22 to 60 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 80 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R081CY357TX - Clay Loam 29-35 PZ
Hydric soil rating: No

Minor Components

Krum

Percent of map unit: 6 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R081CY357TX - Clay Loam 29-35 PZ
Hydric soil rating: No

Doss

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R081BY343TX - Shallow 23-31 PZ
Hydric soil rating: No

Anhalt

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R081CY358TX - Deep Redland 29-35 PZ
Hydric soil rating: No

Data Source Information

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 21, Jun 11, 2020

Williamson County, Texas

DoC—Doss silty clay, moist, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2s0st
Elevation: 630 to 1,840 feet
Mean annual precipitation: 30 to 36 inches
Mean annual air temperature: 66 to 68 degrees F
Frost-free period: 210 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Doss and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Doss

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from limestone

Typical profile

A - 0 to 9 inches: silty clay
Bk - 9 to 17 inches: silty clay
Cr - 17 to 80 inches: bedrock

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: 11 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 70 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D

Ecological site: R081CY574TX - Shallow 29-35 PZ
Hydric soil rating: No

Minor Components

Brackett
Percent of map unit: 7 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R081CY362TX - Steep Adobe 29-35 PZ
Hydric soil rating: No

Bolar
Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R081CY357TX - Clay Loam 29-35 PZ
Hydric soil rating: No

Purves
Percent of map unit: 1 percent
Landform: Plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R081CY574TX - Shallow 29-35 PZ
Hydric soil rating: No

Denton
Percent of map unit: 1 percent
Landform: Plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R081CY357TX - Clay Loam 29-35 PZ
Hydric soil rating: No

Eckrant
Percent of map unit: 1 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R081CY360TX - Low Stony Hill 29-35 PZ

Hydric soil rating: No

Data Source Information

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 21, Jun 11, 2020

Williamson County, Texas

EaD—Eckrant cobbly clay, 1 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t0sg
Elevation: 650 to 1,900 feet
Mean annual precipitation: 30 to 35 inches
Mean annual air temperature: 65 to 69 degrees F
Frost-free period: 210 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Eckrant and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Eckrant

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from limestone

Typical profile

A1 - 0 to 4 inches: cobbly clay
A2 - 4 to 11 inches: very cobbly clay
R - 11 to 80 inches: bedrock

Properties and qualities

Slope: 1 to 8 percent
Surface area covered with cobbles, stones or boulders: 2.3 percent
Depth to restrictive feature: 4 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R081CY360TX - Low Stony Hill 29-35 PZ
Hydric soil rating: No

Minor Components

Brackett

Percent of map unit: 7 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R081CY355TX - Adobe 29-35 PZ
Hydric soil rating: No

Bexar

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R081CY361TX - Redland 29-35 PZ
Hydric soil rating: No

Krum

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R081CY357TX - Clay Loam 29-35 PZ
Hydric soil rating: No

Data Source Information

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 21, Jun 11, 2020

Williamson County, Texas

FaB—Fairlie clay, 1 to 2 percent slopes

Map Unit Setting

National map unit symbol: djq1
Elevation: 550 to 850 feet
Mean annual precipitation: 30 to 42 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 230 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Fairlie and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fairlie

Setting

Landform: Ridges
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from austin chalk formation

Typical profile

H1 - 0 to 8 inches: clay
H2 - 8 to 46 inches: clay
H3 - 46 to 54 inches: bedrock

Properties and qualities

Slope: 1 to 2 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: R086AY011TX - Southern Blackland

Hydric soil rating: No

Data Source Information

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 21, Jun 11, 2020

APPENDIX B

CONSTRUCTION ACTIVITY SCHEDULE

Construction Activity Schedule

Activities	Start Date	Finish Date
1.Demolition (10.1 acres): Silt fence protection, inlet protection on the existing inlets and stone overflow structures shall be installed prior to the initiation of demolition work.		
2.Rough Grading (10.1-acres): Construction entrance/exit shall be installed and all prior erosion control measures installed above to be maintained as necessary during rough grading.		
3.Utility Installation (10.1-acres): All prior erosion control measures installed above to be maintained as necessary during utility installation, inlet protection shall be installed as storm drainage system is constructed.		
4.Building Construction (10.1-acres): All prior erosion control measures installed above to maintained as necessary during construction.		
5.Paving (10.1-acres): All prior erosion control measures installed above to be maintained as necessary during paving and throughout the remainder of the project.		
6.Final Grading/Soil Stabilization/Landscaping (10.1-acres): All temporary erosion control measures to be removed at the conclusion of the project once final stabilization has been achieved. All affected storm sewer inlets and post development BMPs shall be cleaned prior to site completion.		

*Construction activity sequences for linear projects may be conducted on a rolling basis. As a result, construction activities may be at different stages at different locations in the project area. The Contractor is required to complete and update the schedule and adjust as necessary.

APPENDIX C

BEST MANAGEMENT PRACTICE MEASURES AND CONTROLS

Best Management Practice Measures and Controls

Best Management Practice (BMP)	In Use	Maintained Post Construction?
Interceptor Swale		
Diversion Dike		
Pipe Slope Drain		
Vegetation		
Mulching		
Erosion Control Blankets		
Channel Protection		
Dust Control		
Silt Fence		
Organic Filter Berm		
Triangular Sediment Filter Dike		
Inlet Protection		
Stone Outlet Sediment Trap		
Sediment Basin		
Check Dam		
Temporary Sediment Tank		
Stabilized Construction Entrance		
Wheel Wash		
Debris and Trash Management		
Chemical Management		
Concrete Waste Management		
Concrete Sawcutting Waste Management		
Sandblasting Waste Management		
Lime Stabilization Management		
Sanitary Facilities		
Other*		
Other*		

***If another BMP is being used, include the BMP information in Appendix D.**

APPENDIX D

BEST MANAGEMENT PRACTICE CHECKLIST AND FACT SHEETS

EROSION AND SEDIMENT CONTROL CHECKLIST

Instructions: Check each item and fill in the blanks below to evaluate compliance for each drainage area and location.

Stabilization Practices:

☐ Stabilization will be initiated on all disturbed areas where construction activity will not occur for a period of more than 21 calendar days by the 14th day after construction activity has permanently or temporarily ceased. Stabilization measures to be used include:

- ☐ Temporary Seeding
- ☐ Permanent Seeding
- ☐ Mulching
- ☐ Sod Stabilization
- ☐ Geotextiles
- ☐ Other _____

Structural Practices

☐ Flows from upstream areas will be diverted from exposed soils to the degree attainable. Measures to be used include:

- ☐ Earth Dike
- ☐ Drainage Swale
- ☐ Interceptor Dike and Swale
- ☐ Pipe Slope Drain
- ☐ Other _____

For Drainage locations serving less than 10 disturbed acres, Sediment *Basin will be installed and will include:*

- ☐ Sediment Trap
- ☐ Silt Fence or equivalent along all sideslopes & downstream boundaries

For Drainage locations serving 10 or more disturbed acres, a Sediment Basin will be installed (See Appendix N), if a Sediment Basin is not attainable on-site, Sediment Controls will be installed & will include:

- ☐ Sediment Trap
- ☐ Silt Fence or equivalent along all sideslopes & downstream boundaries
- ☐ Sediment Basin

FINAL STABILIZATION / TERMINATION CHECKLIST

1. All soil disturbing activities are complete.

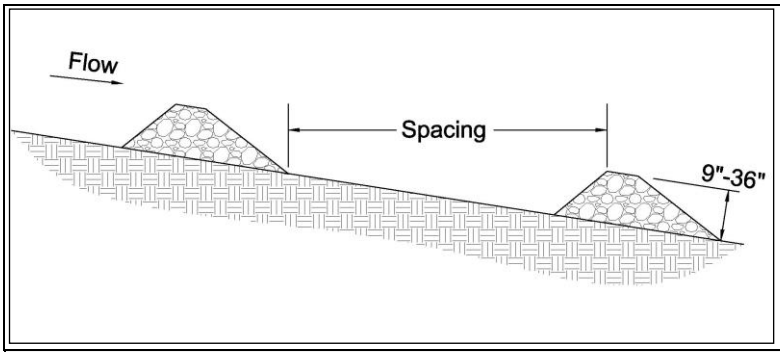
2. Temporary erosion and sediment control measures have been, or will be, removed at an appropriate time.

3. All areas of the construction site not otherwise covered by a permanent pavement or structure have been stabilized with a uniform perennial vegetative cover with a density of 70% or equivalent measures have been employed.

2.0 Erosion Controls

2.1 Check Dam

Erosion Control



Description: Check dams are small barriers consisting of loose rock, rock bags, or organic filter tubes placed across a drainage swale or ditch. They reduce the velocity of small concentrated flows, provide a limited barrier for sediment and reduce the potential for erosion of the swale or ditch.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Heights between 9 inches and 36 inches
- Top of the downstream dam should be at the same elevation as the toe of the upstream dam

ADVANTAGES / BENEFITS:

- Reduced velocities in long drainage swales or ditches
- May be used with other channel protection measures
- Provides some sediment removal

DISADVANTAGES / LIMITATIONS:

- Cannot be used in live stream channels
- Minor ponding upstream of the check dams
- Extensive maintenance or replacement of the dams required after heavy flows or high velocity flows
- Mowing hazard from loose rocks if all rock is not removed at end of construction

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Remove silt when it reaches approximately ⅓ the height of the dam or 12 inches, whichever is less

TARGETED POLLUTANTS

- ◒ Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control

Slope Protection

Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.30-0.50
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ● Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *None*

2.1.1 Primary Use

Check dams are used in long drainage swales or ditches to reduce erosive velocities. They are typically used in conjunction with other channel protection techniques such as vegetation lining and turf reinforcement mats. Check dams provide limited treatment to sediment-laden flows. They are more useful in reducing flow velocities to acceptable levels for stabilization methods. Check dams may be used in combination with stone outlet sediment traps, where the check dams prevent erosion of the swale while the sediment trap captures sediment at the downstream end of the swale.

2.1.2 Applications

Check dams are typically used in swales and drainage ditches along linear projects such as roadways. They can also be used in short swales down a steep slope, such as swales down a highway embankment, to reduce velocities. Check dams shall not be used in live stream channels.

Check dams should be installed before the contributing drainage area is disturbed, so as to mitigate the effects on the swale from the increase in runoff. If the swale itself is graded as part of the construction activities, check dams are installed immediately upon completion of grading to control velocities in the swale until stabilization is completed.

2.1.3 Design Criteria

General Criteria

- Typically, the dam height should be between 9 inches and 36 inches, depending on the material of which they are made. The height of the check dam shall always be less than one-third the depth of the channel.
- Dams should be spaced such that the top of the downstream dam is at the same elevation as the toe of the upstream dam. On channel grades flatter than 0.4 percent, check dams should be placed at a distance that allows small pools to form between each check dam.
- The top of the side of the check dam shall be a minimum of 12 inches higher than the middle of the dam. In addition, the side of the dams shall be embedded a minimum of 18 inches into the side of the drainage ditch, swale or channel to minimize the potential for flows to erode around the side of the dam.
- Larger flows (greater than 2-year, 24-hour design storm) must pass the check dam without causing excessive upstream flooding.
- Check dams should be used in conjunction with other sediment reduction techniques prior to releasing flow offsite.
- Use geotextile filter fabric under check dams of 12 inches in height or greater. The fabric shall meet the following minimum criteria:
    - Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles, 250-lbs.
    - Puncture Rating, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 135-lbs.
    - Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 420-psi.
    - Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Sieve No. 20 (max).
- Loose, unconfined soil, wood chips, compost, and other material that can float or be transported by runoff shall not be used to construct check dams.

Rock Check Dams

- Stone shall be well graded with stone size ranging from 3 to 6 inches in diameter for a check dam height of 24 inches or less. The stone size range for check dams greater than 24 inches is 4 to 8 inches in diameter.
- Rock check dams shall have a minimum top width of 2 feet with side slopes of 2:1 or flatter.

Rock Bag Check Dams

- Rock bag check dams should have a minimum top width of 16 inches.
- Bag length shall be 24 inches to 30 inches, width shall be 16 inches to 18 inches and thickness shall be 6 inches to 8 inches and having a minimum weight of 40 pounds.
- Minimum rock bag dam height of 12 inches would consist of one row of bags stacked on top of two rows of bag. The dam shall always be one more row wide than it is high, stacked pyramid fashion.
- Bags should be filled with pea gravel, filter stone, or aggregate that is clean and free of deleterious material.
- Sand bags shall not be used for check dams, due to their propensity to break and release sand that is transported by the concentrated flow in the drainage swale or ditch.
- Bag material shall be polypropylene, polyethylene, polyamide or cotton burlap woven fabric, minimum unit weight 4-ounces-per-square-yard, Mullen burst strength exceeding 300-psi as determined by ASTM D3786, Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, and ultraviolet stability exceeding 70 percent.
- PVC pipes may be installed through the dam to allow for controlled flow through the dam. Pipe should be schedule 40 or heavier polyvinyl chloride (PVC) having a nominal internal diameter of 2 inches.

Sack Gabion Check Dams

- Sack gabion check dams may be used in channels with a contributing drainage area of 5 acres or less.
- Sack gabions shall be wrapped in galvanized steel, woven wire mesh. The wire shall be 20 gauge with 1 inch diameter, hexagonal openings.
- Wire mesh shall be one piece, wrapped around the rock, and secured to itself on the downstream side using wire ties or hog rings.
- Sack gabions shall be staked with ¾ inch rebar at a maximum spacing of three feet. Each wire sack shall have a minimum of two stakes.
- Stone shall be well graded with a minimum size range from 3 to 6 inches in diameter.

Organic Filter Tube Check Dams

- Organic filter tubes may be used as check dams in channels with a contributing drainage area of 5 acres or less.
- Organic filter tubes shall be a minimum of 12 inches in diameter.
- Filter material used within tubes to construct check dams shall be limited to coir, straw, aspen fiber and other organic material with high cellulose content. The material should be slow to decay or leach nutrients in standing water.
- Staking of filter tubes shall be at a maximum of 4 foot spacing and shall alternate through the tube and on the downstream face of the tube.
- Unless superseded by requirements in this section, filter tubes and filter material shall comply with the

criteria in *Section 3.6 Organic Filter Tubes*.

2.1.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.9 Check Dam (Rock). Specifications are also available in the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004), Item 506.2.A and Item 506.4.C.1.

2.1.5 Inspection and Maintenance Requirements

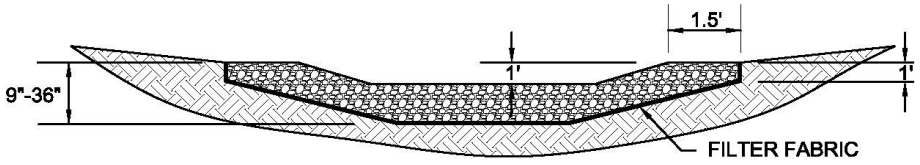
Check dams should be inspected regularly (at least as often as required by the TPDES Construction General Permit). Silt must be removed when it reaches approximately 1/3 the height of the dam or 12 inches, whichever is less. Inspectors should monitor the edges of the dam where it meets the sides of the drainage ditch, swale or channel for evidence of erosion due to bypass or high flows. Eroded areas shall be repaired. If erosion continues to be a problem, modifications to the check dam or additional controls are needed.

Care must be used when taking out rock check dams in order to remove as much rock as possible. Loose rock can create an extreme hazard during mowing operations once the area has been stabilized.

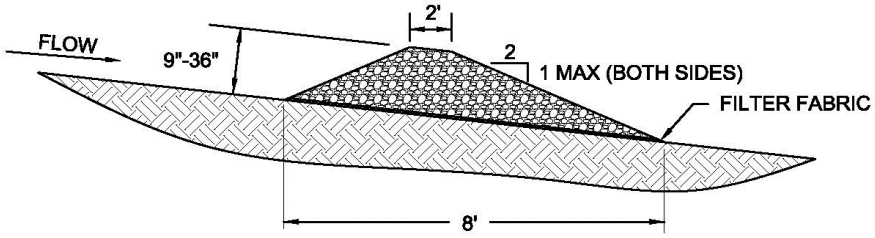
2.1.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

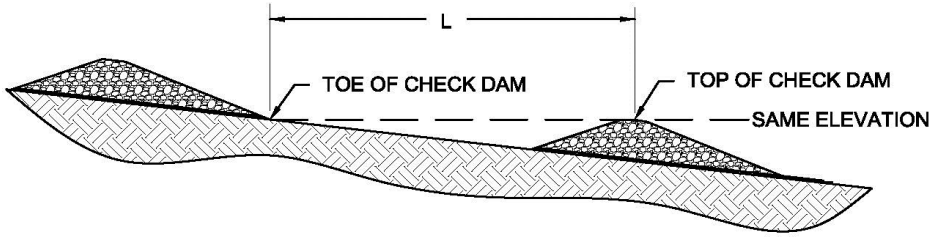
The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be adapted for the site by the designer. Dimensions and notes appropriate for the application must also be added by the designer.



ROCK CHECK DAM VIEW LOOKING UPSTREAM
N.T.S.



CROSS SECTION OF ROCK CHECK DAM
N.T.S.

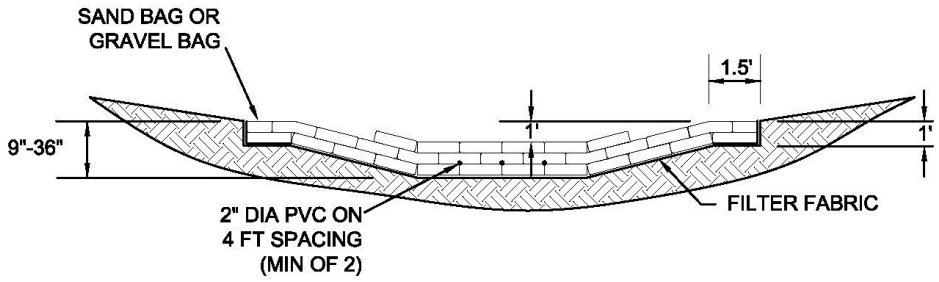


SPACING BETWEEN ROCK CHECK DAMS
N.T.S.

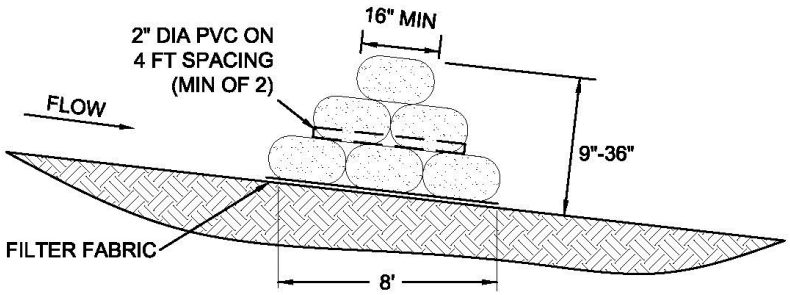
NOTES: ACTUAL DIMENSIONS OF THE CHECK DAMS SHALL BE DESIGNED BASED ON FLOW CONDITIONS IN THE DRAINAGE SWALE OR DITCH. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS USED TO DESIGN THE CHECK DAMS.

- HEIGHT OF CHECK DAMS BASED ON SWALE OR DITCH DIMENSIONS AND FLOW CONDITIONS.
- SPACING OF CHECK DAMS BASED ON GRADE OF THE SWALE OR DITCH. TOP OF DOWNSTREAM DAM SHALL BE AT SAME ELEVATION AS TOE OF UPSTREAM DAM

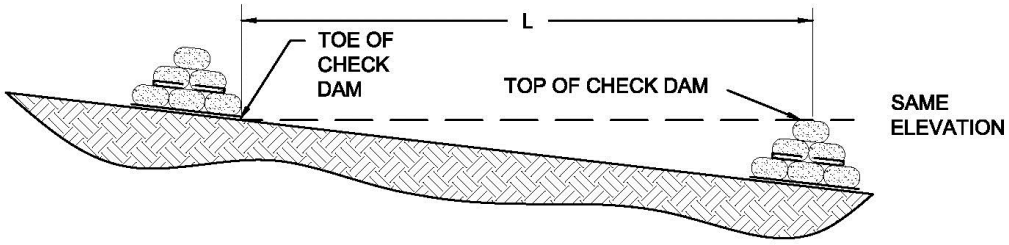
Figure 2.1 Schematics of Rock Check Dams
(Source: Modified from Stormwater Management Manual for Western Washington)



ROCK BAG CHECK DAM VIEW LOOKING UPSTREAM
N.T.S.



CROSS SECTION OF ROCK BAG CHECK DAM
N.T.S.

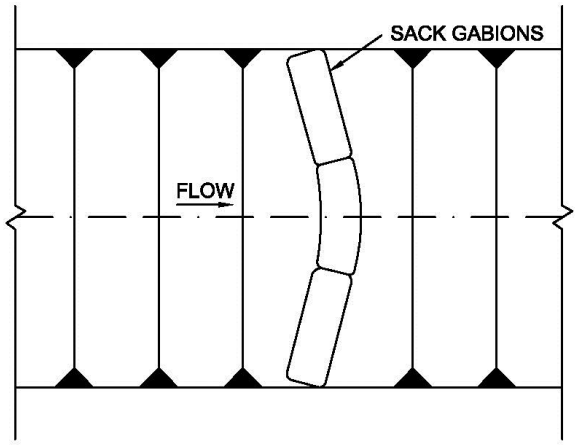


SPACING BETWEEN ROCK BAG CHECK DAMS
N.T.S.

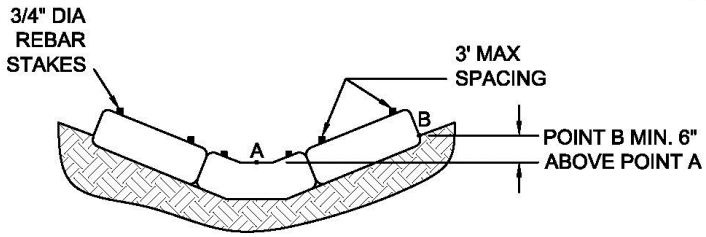
NOTES: ACTUAL DIMENSIONS OF THE CHECK DAMS SHALL BE DESIGNED BASED ON FLOW CONDITIONS IN THE DRAINAGE SWALE OR DITCH. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS USED TO DESIGN THE CHECK DAMS.

- HEIGHT OF CHECK DAMS BASED ON SWALE OR DITCH DIMENSIONS AND FLOW CONDITIONS.
- SPACING OF CHECK DAMS BASED ON GRADE OF THE SWALE OR DITCH. TOP OF DOWNSTREAM DAM SHALL BE AT SAME ELEVATION AS TOE OF UPSTREAM DAM.

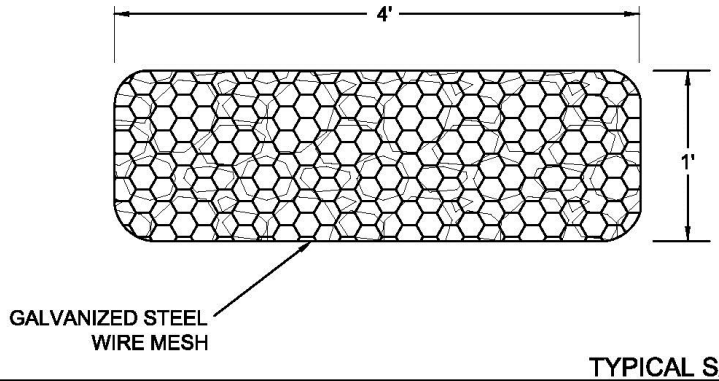
Figure 2.2 Schematics of Rock Bag Check Dams



SACK GABION CHECK DAM PLAN VIEW
N.T.S.



SACK GABION CHECK DAM VIEW LOOKING UPSTREAM
N.T.S.

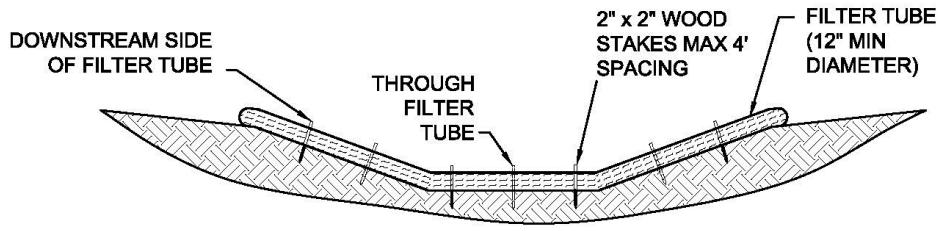


TYPICAL SACK GABION
N.T.S.

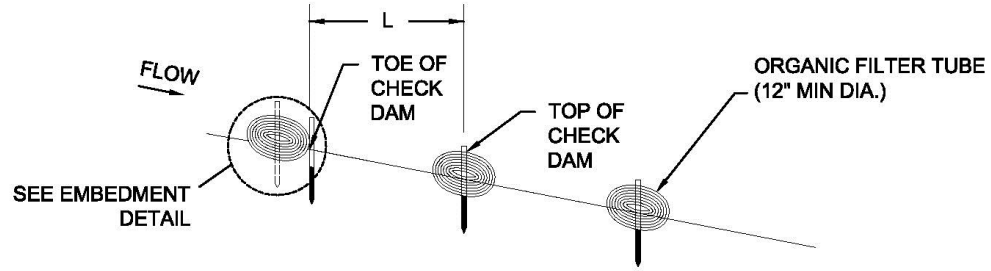
NOTES: ACTUAL DIMENSIONS OF THE CHECK DAMS SHALL BE DESIGNED BASED ON FLOW CONDITIONS IN THE DRAINAGE SWALE OR DITCH. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS USED TO DESIGN THE CHECK DAMS.

- HEIGHT OF CHECK DAMS BASED ON SWALE OR DITCH DIMENSIONS AND FLOW CONDITIONS.
- SPACING OF CHECK DAMS BASED ON GRADE OF THE SWALE OR DITCH. TOP OF DOWNSTREAM DAM SHALL BE AT SAME ELEVATION AS TOE OF UPSTREAM DAM.

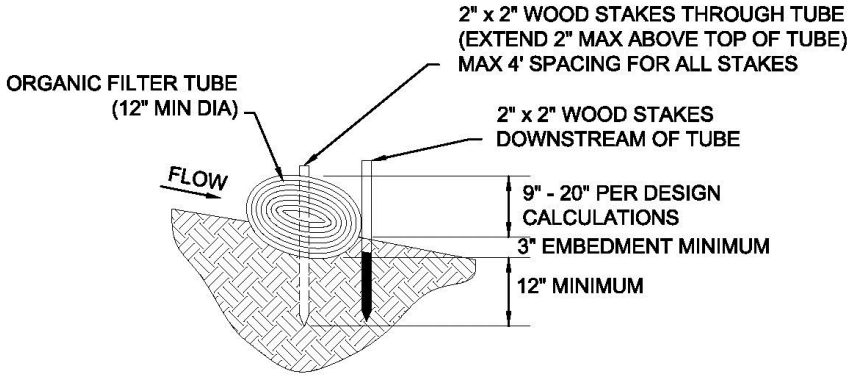
Figure 2.3 Schematics of Sack Gabion Check Dams
(Source: Modified from Texas Department of Transportation Detail Sheet EC (2)-93)



ORGANIC FILTER TUBE CHECK DAM VIEW LOOKING UPSTREAM
N.T.S.



ORGANIC FILTER TUBE CHECK DAM PROFILE
N.T.S.



EMBEDMENT DETAIL FOR ORGANIC FILTER TUBE CHECK DAM
N.T.S.

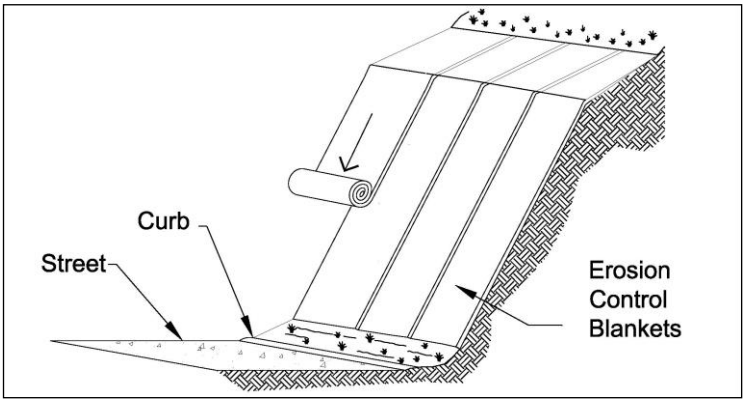
NOTES: ACTUAL DIMENSIONS OF THE CHECK DAMS SHALL BE DESIGNED BASED ON FLOW CONDITIONS IN THE DRAINAGE SWALE OR DITCH. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS USED TO DESIGN THE CHECK DAMS.

- HEIGHT OF CHECK DAMS BASED ON SWALE OR DITCH DIMENSIONS AND FLOW CONDITIONS.
- SPACING OF CHECK DAMS BASED ON GRADE OF THE SWALE OR DITCH. TOP OF DOWNSTREAM DAM SHALL BE AT SAME ELEVATION AS TOE OF UPSTREAM DAM.

Figure 2.4 Schematics of Organic Filter Tube Check Dams
(Source: Modified from City of Plano BMP S-7)

2.3 Erosion Control Blankets

Erosion Control



Description: An erosion control blanket (ECB) is a temporary, degradable, rolled erosion control product that reduces soil erosion and assists in the establishment and growth of vegetation. ECBs, also known as soil retention blankets, are manufactured by many companies and are composed primarily of processed, natural, organic materials that are woven, glued, or structurally bound together with natural fiber netting or mesh on one or both sides.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- ECB selected based on slope, flow rate and length of service
- Specify preparation of soil surface to ensure uniform contact with blanket
- Installation and anchoring according to manufacturer's recommendations

ADVANTAGES / BENEFITS:

- Holds seed and soil in place until vegetation is established
- Effective for slopes, embankments and small channels

DISADVANTAGES / LIMITATIONS:

- Not for use on slopes greater than 2:1 or in channels with shear stresses greater than 2.0 pounds per square foot

MAINTENANCE REQUIREMENTS:

- Replace or re-anchor loosened blankets
- Remove sediment deposited on blankets

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Waste

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier
Channel Protection
Temporary Stabilization
Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.90 (*Ground cover*)
Fe=0.65
(*Perimeter w/o vegetation*)

IMPLEMENTATION CONSIDERATIONS

- ● Capital Costs
- ◒ Maintenance
- ◒ Training
- ● Suitability for Slopes > 5%

Other Considerations:

- *Life expectancy, partial degradation, and mowing/ maintenance issues for ECBs left in place as part of final stabilization*

2.3.1 Primary Use

Erosion control blankets (ECBs) are used to hold seed and soil in place until vegetation is established on disturbed areas. They can be used on many types of disturbed areas, but are particularly effective for slopes and embankments and in small drainage swales.

ECBs seeded for vegetation may be used as a perimeter control. When used in combination with other sediment barriers, such as silt fence or organic filter tubes, blankets may be used as a perimeter control with or without vegetation.

2.3.2 Applications

ECBs may be used on many types of disturbed areas but are most applicable on gradual to steep (2:1) cut/fill slopes and in swales and channels with low to moderate flow velocities. In these applications they may provide temporary stabilization by themselves or may be used with seeding to provide final stabilization. ECBs are also used to establish vegetation in channels where velocities are less than 6.0 feet per second.

When seeded for establishment of vegetation, ECBs can be an effective perimeter along the down slope side of linear construction projects (roads and utilities). ECBs with vegetation are also used as perimeter controls for new development, particularly at the front on residential lots in new subdivisions. ECBs are an effective aid in establishing vegetated filter strips.

2.3.3 Design Criteria

- The designer shall specify the manufacturer, type of erosion control blanket to be used, and dimensioned limits of installation based on the site topography and drainage.
- The type and class of erosion control blanket must be specified in accordance with the manufacturer's guidance for the slope of the area to be protected, the flow rate (sheet flow on cut/fill slopes) or velocity (concentrated flow in swales) of stormwater runoff in contact in with the ECB, and the anticipated length of service.
- ECBs should meet the applicable "Minimum Performance Standards for TxDOT" as published by TxDOT in its "Erosion Control Report" and/or be listed on the most current annual "Approved Products List for TxDOT" applicable to TxDOT Item 169 Soil Retention Blanket and its Special Provisions.
- ECBs shall be installed vertically down slope (across contours) on cut/fill slopes and embankments and along the contours (parallel to flow) in swales and drainage ditches.
- ECBs designed to remain onsite as part of final stabilization shall have netting or mesh only on one side (the exposed side) of the ECB. The ECB shall be installed with the side that does not have netting or mesh in contact with the soil surface. All materials in the ECB, including anchors, should be 100 percent biodegradable within three years.
- On cut/fill slopes and drainage ditches or swales designed to receive erosion control blankets for temporary or final stabilization, installation of the ECBs shall be initiated immediately after completing grading of the slope or drainage way, and in no case later than 14 days after completion of grading these features. Do not delay installation of ECBs on these highly-erodible areas until completion of construction activities and stabilization of the remainder of the site.
- Unless the ECB is seeded to establish vegetation, perimeter control applications shall be limited to thirty foot wide drainage areas (i.e. linear construction projects) for an 8 foot width of ECB. When seeded for vegetation, use of ECBs for perimeter control shall follow the criteria in the *Section 3.15 Vegetated Filter Strips and Buffers*.
- Prior to the installation of the ECB, all rocks, dirt clods, stumps, roots, trash and any other obstructions that would prevent the ECB from lying in direct contact with the soil shall be removed.

- Anchor trenching shall be located along the top of slope of the installation area, except for small areas with less than 2 percent slope.
- Installation and anchoring shall conform to the recommendations shown within the manufacturer's published literature for the erosion control blanket. Anchors (staples) shall be a minimum of 6 inches in length and 1 inch wide. They shall be made of 11-gauge wire, or equivalent, unless the ECB is intended to remain in place with final stabilization and biodegrade.
- Particular attention must be paid to joints and overlapping material. Overlap along the sides and at the ends of ECBs should be per the manufacturer's recommendations for site conditions and the type of ECB being installed. At a minimum, the end of each roll of ECB shall overlap the next roll by 3 feet and the sides of rolls shall overlap 4 inches.
- After installation, the blankets should be checked for uniform contact with the soil, security of the lap joints, and flushness of the staples with the ground.
- When ECBs are installed to assist with establishing vegetation, seeding shall be completed before installation of the ECB. Criteria for seeding are provided in *Section 2.9 Vegetation*.
- Turf Reinforcement Mats should be used instead of ECBs for permanent erosion control and for stabilizing slopes greater than 2:1.
- ECBs are limited to use in swales and channels that have shear stresses of less than 2.0 pounds per square foot. Turf reinforcement mats shall be used in open channels with higher shear stresses.

2.3.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.15 Erosion Control Blankets and in Item 169 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT, 2004).

2.3.5 Inspection and Maintenance Requirements

Erosion control blankets should be inspected regularly (at least as often as required by the TPDES Construction General Permit) for bare spots caused by weather or other events. Missing or loosened blankets must be replaced or re-anchored.

Check for excess sediment deposited from runoff. Remove sediment and/or replace blanket as necessary. In addition, determine the source of excess sediment and implement appropriate measures to control the erosion. Also check for rill erosion developing under the blankets. If found, repair the eroded area. Determine the source of water causing the erosion and add controls to prevent its reoccurrence.

2.3.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. The designer is responsible for working with ECB manufacturers to ensure the proper ECB is specified based on the site topography and drainage. Installation measures should be dictated by the ECB manufacturer and are dependent on the type of ECB installed. Manufacturer's recommendations for overlap, anchoring, and stapling shall always be followed. Criteria shown here are applicable only when they are more stringent than those provided by the manufacturer.

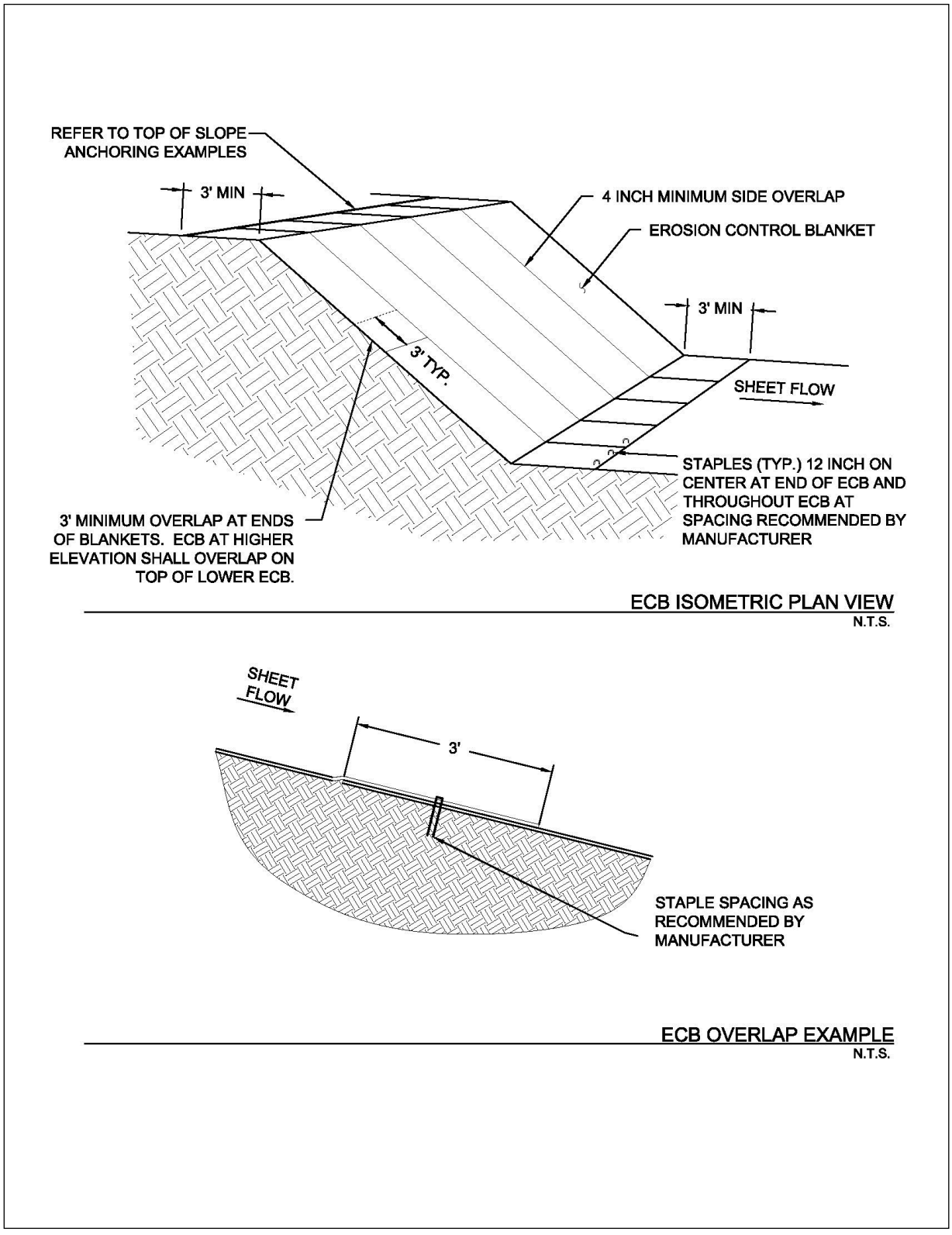
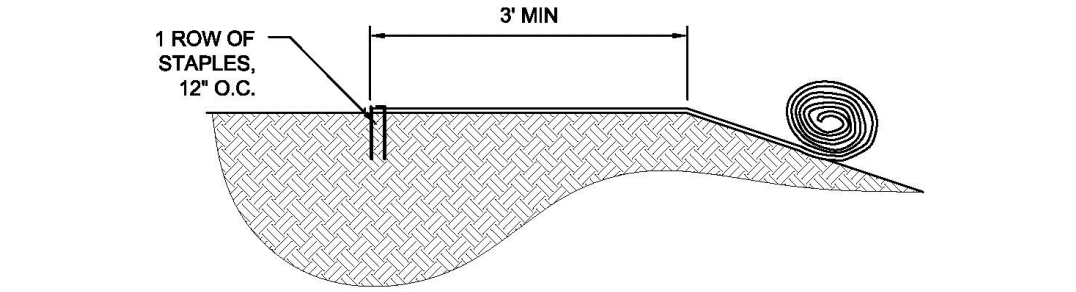
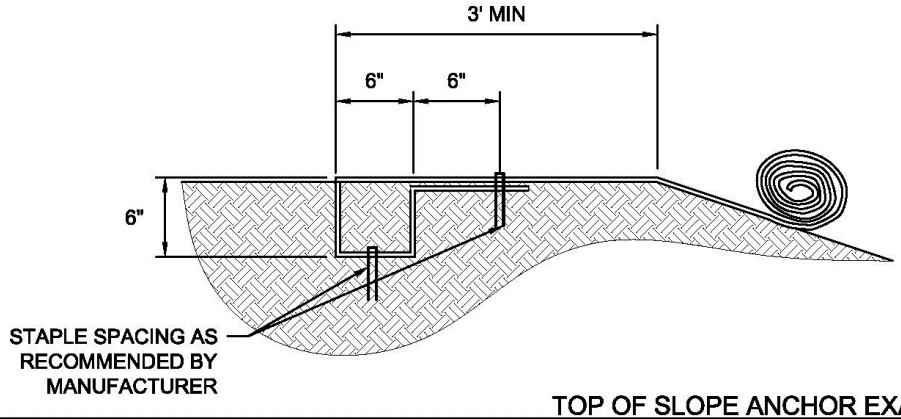


Figure 2.7 Schematics of Erosion Control Blankets



TOP OF SLOPE ANCHOR EXAMPLE 1
N.T.S.



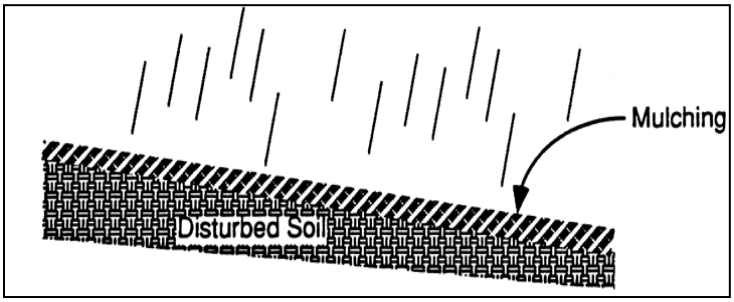
TOP OF SLOPE ANCHOR EXAMPLE 2
N.T.S.

NOTE: ANCHORING METHODS PROVIDED ARE EXAMPLES OF THE TYPE OF ANCHORING THE ECB MANUFACTURER MAY RECOMMEND. THERE ARE MORE THAN A DOZEN DIFFERENT TOP OF SLOPE ANCHORING METHODS BASED ON TYPE OF ECB, TYPE OF SOIL, SPECIFIED PERFORMANCE PERIOD, SLOPE STEEPNESS, ETC. ALWAYS FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR ANCHORING BASED ON THE SITE-SPECIFIC APPLICATION.

Figure 2.8 Anchor Examples for Erosion Control Blankets
(Sources: American Excelsior Company and Western Excelsior Corporation)

2.5 Mulching

Erosion Control



Description: Mulching is the application of a uniform layer of organic material over barren areas to reduce the effects of erosion from rainfall. Types of mulch include compost mixtures, straw, wood chips, bark, or other fibers. Commercialized surface treatments that combine straw or other mulch material with organic or inorganic soil binding systems are also available and are particularly useful on steep slopes.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Specify even, uniform application
- Thickness of 1 to 2 inches, depending on application
- Application criteria specific to type of mulch
- Anchor mulch on slopes of 3:1 to 1.5:1
- Do not use mulch on slopes steeper than 1.5:1

ADVANTAGES / BENEFITS:

- Provides immediate stabilization of bare areas
- May be used with seeding for final stabilization
- Decreases soil moisture loss
- Decreases velocity of sheet flow
- Reduces volume of sediment-laden flow

DISADVANTAGES / LIMITATIONS:

- Subject to removal by wind or water
- Results in lower soil temperature, which may yield longer seed germination periods
- Should not be applied within the ordinary high-water mark of natural surface waters or within the design flow depth of constructed ditches and channels

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Replace regularly in high traffic areas to maintain uniform thickness
- Maintain a stockpile of excess mulch at the site to repair problem spots

TARGETED POLLUTANTS

- ◒ Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control

Slope Protection

Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.75-0.90

(Depends on coverage)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *Availability of materials for mulch*
- *Application depends on slope*

2.5.1 Primary Use

Mulch may be used by itself to temporarily stabilize bare areas or with seed to establish final stabilization of bare areas. Mulch protects the soil from erosion and moisture loss by lessening the effects of wind, water, and sunlight. It also decreases the velocity of sheet flow, thereby reducing the volume of sediment-laden water flow leaving the mulched area.

2.5.2 Applications

Mulch may be applied on most areas disturbed by construction that require surface protection including:

- Freshly seeded or planted areas;
- Disturbed areas at risk of erosion due to the time period being unsuitable for growing vegetation;
- Disturbed areas that are not conducive to vegetation for temporary stabilization; or
- Steep slopes of 3:1 to 1.5:1, provided the mulch is anchored to the soil by use of soil stabilizers, netting, or crimping.

Mulch is frequently applied with seeding for vegetation. In these cases, refer to *Section 2.9 Vegetation* for related criteria that may affect mulching.

Mulch may also be applied with commercially available polymers for soil surface treatment to bind the mulch with the soil. This method is particularly useful on steep slopes. Related criteria are available in *Section 2.7 Soil Surface Treatments*.

2.5.3 Design Criteria

General

- Specific design information is required for the use of this control. The designer shall specify the type of mulch to be used, the application rate and/or thickness, and the type of anchoring (if applicable) based on site conditions.
- Choice of mulch depends largely on slope and soil type, in addition to availability of materials.
- Netting, adhesive polymers, or other methods of anchoring the mulch are required on slopes of 3:1 to 1.5:1. Do not use mulch on slopes steeper than 1.5:1.
- Mulch should be applied in an even and uniform manner where concentrated water flow is negligible. Do not apply mulch within the ordinary high-water mark of natural surface waters or within the design flow depth of constructed ditches and channels.
- Hay should not be used as mulch.
- Organic mulches may be distributed by hand or by mechanical means, provided a uniform thickness is achieved.
- When mulch is used with vegetation for final stabilization, fertilization and soil treatment for vegetation establishment should be done prior to placement of mulch, with the exception of hydroseeding or when seed is distributed following straw mulch spread during winter months.
- Table 2.1 on the following page contains a summary of mulch types and general guidelines.

Table 2.1 Mulch Standards and Guidelines			
Mulch Material	*Quality Standards*	*Application Rates*	*Remarks*
Straw	Air-dried, free of mold and not rotten. Certified Weed Free.	1.5 to 2 tons per acre	Cost-effective when applied with adequate thickness. Straw must be held in place by crimping, netting, or soil stabilizer.
Chipped Site Vegetation	Should include gradation from fine to coarse to promote interlocking properties. Must be free of waste materials such as plastic bags, metal debris, etc.	10 to 12 tons per acre	Cost-effective method to dispose of vegetative debris from site. Best application is for temporary stabilization where construction will resume. Use cautiously on areas where vegetation will be established, as wood chips will deplete soil nitrogen.
Erosion Control Compost (Wood Chip and Compost Mixture)	Shall meet the Physical Requirements in Table 1 of TxDOT Special Specification 1001.	Approx. 10 tons per acre	Special caution is advised regarding the source and composition of wood mulches. Ensure compost is free of herbicides. Ensure wood chips are from unpainted and untreated wood.
Hydraulic Mulch	Must not contain sawdust, cardboard, paper, paper byproducts, plastics, or synthetics. No petroleum-based tackifiers.	Follow the manufacturer's recommendations. Application rate increases with slope steepness.	May be particularly effective on slopes steeper than 3:1. Ensure wood fibers are from unpainted and untreated wood.

Straw Mulch

- Straw mulch shall be free of weed and grass seed.
- Straw mulch shall be air-dried, free of mold, and not rotten.
- Straw fibers shall be a minimum of 4 inches and a maximum of 8 inches in length.
- Straw mulch must be anchored by using a tractor-drawn crimper to punch into the soil, by placing degradable netting above the mulch, or by application of a soil stabilizer (*Section 2.7 Soil Surface Treatments*).

Chipped Site Vegetation

- Chipped site vegetation is suitable mulch for temporary stabilization before construction will resume in an area of the construction site.
- Ensure the cleared vegetation is free of trash, litter, and debris prior to chipping.

- Chipped pieces shall be a minimum of 2 inches and a maximum of 6 inches in length.
- Chipped woody vegetation that is greater than 50% wood chips by volume may result in mulch that depletes nitrogen in the soil. It is useful as mulch for temporary stabilization where construction activity will resume and result in removal of the mulch. However, it should be used with care on areas where vegetation will be established for final stabilization.
- Chipped vegetation that is greater than 50 percent wood chips by volume may require treatment with a nitrogen fertilizer when used for mulch with seeding.
- Chipped vegetation that includes green matter will include seeds. It should not be used on areas that have specific landscaping requirements.

Erosion Control Compost (Wood Chip and Compost Mixture)

- Wood chip and compost mixture used for mulch shall meet the criteria for Erosion Control Compost in TxDOT Special Specification 1001.
- Wood chips for the mixture shall be less than or equal to 5 inches in length with 95 percent passing a 2 inch screen and less than 30 percent passing a 1 inch screen. Mulch should not contain chipped manufactured boards or chemically treated wood such as particleboard, railroad ties, or similar treated wood.
- Compost for the mixture shall meet the Physical Requirements specified in Table 1 of 2004 TxDOT Special Specification 1001, Compost. It must be free of herbicides and other chemicals.
- Mixing of the Erosion Control Compost into the soil surface is allowed when vegetation is established for final stabilization, except for drill seeding, in which case it is best to leave the mulch as an undisturbed top layer.

Hydraulic Mulch (Including Bonded Fiber Matrix)

- Hydraulic mulch shall consist of a mixture of shredded wood fiber and a stabilizing binder. The mulch must not contain sawdust, cardboard, paper or paper byproducts.
- Shredded wood fiber shall be long strand, whole wood fibers that are:
    - Minimum of 25 percent of fibers 3/8 inch long;
    - Minimum of 50 percent held on a No. 25 sieve;
    - Free from paint, printing ink, varnish, petroleum products, seed germination inhibitors; and
    - Free from synthetic or plastic materials.
- Mulch binders may be organic or inorganic polymers. Asphaltic emulsions and other petroleum-based tackifiers shall not be used.
- The stabilizing emulsion must be nonflammable, non-toxic to aquatic organisms, and free from growth or germination inhibiting factors.
- Areas hydraulically mulched shall be protected from all traffic, including foot traffic, a minimum of 24 hours to allow the mulch to dry and cure. Depending on the mulch, up to 48 hours of protection may be required. Always follow manufacturer's recommendations.
- Hydraulic mulch provides limited to no protection until cured. Do not apply when rain is forecast within the next 24 hours.
- Hydraulic mulch may be particularly effective on slopes steeper than 3:1.

2.5.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.16 Mulching. Specifications for

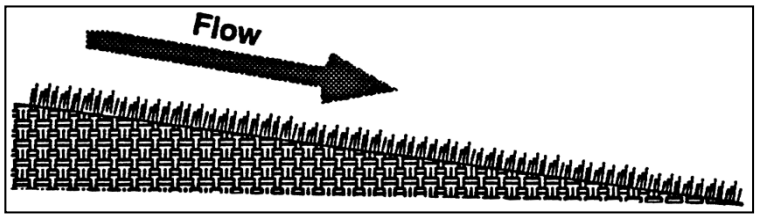
compost may be found in Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges (TxDOT 2004) Item 161.

2.5.5 Inspection and Maintenance Requirements

Mulched areas should be inspected regularly (at least as often as required by the TPDES Construction General Permit) for thin or bare spots caused by natural decomposition or weather related events. Mulch in high traffic areas should be replaced on a regular basis to maintain uniform protection. Excess mulch should be brought to the site and stockpiled for use during the maintenance period to dress problem spots.

2.9 Vegetation

Erosion Control



Description: Vegetation, used as an erosion control, is the sowing or sodding of grasses, small grains, or legumes to provide temporary and final vegetative stabilization for disturbed areas.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Specify preparation of the soil surface before seeding or sodding
- Minimum of 4 to 6 inches of top soil required, depending on subsurface conditions
- Specify soil amendments depending on soil conditions
- Select seed or sod species appropriate for the climate, season, and soil

ADVANTAGES / BENEFITS:

- More effective and easier to maintain than sediment controls during a long construction period
- May be used for temporary or final stabilization

DISADVANTAGES / LIMITATIONS:

- Not appropriate for areas with heavy pedestrian, vehicular traffic, or concentrated, high velocity flow
- May require days to weeks for adequate establishment
- Alternate erosion control is needed until vegetation is established

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Protect newly seeded areas from excessive runoff, high velocity flow, and traffic until vegetation is established
- Water and fertilize until vegetation is established
- Reseed and/or provide mulch or another control for bare spots
- Rake accumulations of sediment from the vegetation

TARGETED POLLUTANTS

- ● Sediment
- ◒ Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control

Slope Protection

Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.90
(*When fully established; lower while vegetation is first growing*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *Design is unique to soil and other conditions at each site*
- *Watering and other maintenance required until vegetation is established*

2.9.1 Primary Use

Vegetation is used as a temporary or final stabilization measure for areas disturbed by construction. As a temporary control, vegetation is used to stabilize stockpiles, earthen dikes, and barren areas that are inactive for longer than two weeks. As a final control at the end of construction, grasses and other vegetation provide good protection from erosion along with some filtering for overland runoff. Subjected to acceptable runoff velocities, vegetation can provide a positive method of long-term stormwater management as well as a visual amenity to the site.

Other control measures may be required to assist during the establishment of vegetation. These other controls include erosion control blankets, mulching, swales, and dikes to direct flow around newly seeded areas and proper grading to limit runoff velocities during construction.

2.9.2 Applications

Vegetation effectively reduces erosion in channels and swales and on stockpiles, dikes, and mild to medium slopes. Vegetative strips can provide some protection and sediment trapping when used as a perimeter control for utility and site development construction. Refer to *Section 3.15 Vegetated Filter Strips and Buffers* for more information.

In many cases, the initial cost of temporary seeding may be high compared to tarps or covers for stockpiles or other barren areas subject to erosion. This initial cost should be weighed with the amount of time the area is to remain inactive, since vegetation is more effective and the maintenance cost for vegetated areas is much less than most structural controls.

2.9.3 Design Criteria

General

- Vegetation is a highly effective erosion control when the vegetation is fully established. Until then, additional controls are needed. Sediment controls should not be removed from vegetated areas until the vegetation is established.
- On grades steeper than 20:1 (5 percent), anchored mulch or erosion control blankets are required to protect seeded areas until vegetation is established. Refer to *Section 2.5 Mulching* and *Section 2.3 Erosion Control Blankets* for design criteria.
- Vegetation may be used by itself for channel protection when the channel grade is less than 2 percent and the temporary control design storm (2-year, 24-hour) and the conveyance storm (25-year, 24-hour) flow velocities are less than 6 feet per second.
- If the velocity of the temporary control design storm is greater than 2 feet per second, erosion control blankets shall be used in the channel while vegetation is being established. Turf reinforcement mats are required when the velocity exceeds 6 feet per second. Refer to *Section 2.3 Erosion Control Blankets* and *Section 2.8 Turf Reinforcement Mats* for design criteria.
- Stabilization of channels with vegetation is limited to channels that have side slopes of 3:1 or flatter.
- On cut/fill slopes and channels designed to receive temporary or final vegetation, establishment of vegetation shall be initiated immediately after completing grading of the cut/fill slope or channel, and in no case later than 14 days after completion of grading on these features. It is not acceptable to delay establishing vegetation on these highly-erodible areas until completion of construction activities and stabilization of the remainder of the site.

Surface Preparation

- Unless infeasible, remove and stockpile existing topsoil at the start of grading activities. Store topsoil in a series of small stockpiles instead of one large stockpile to decrease the loss of aerobic soil micro-organisms during stockpiling.

- Interim or final grading must be completed prior to seeding or sodding.
- To minimize soil compaction of areas to be vegetated, limit vehicle and equipment traffic in these areas to the minimum necessary to accomplish grading.
- Install all necessary erosion structures such as dikes, swales, diversions, etc. prior to seeding or sodding.
- Spread stockpiled topsoil evenly over the disturbed area to be vegetated.
- Depth of topsoil shall be a minimum of 4 inches, with 6 inches required where the topsoil is over rock, gravel or otherwise unsuitable material for root growth. After spreading stockpiled topsoil, provide additional top soil as needed to achieve these depths.
- Compost Manufactured Topsoil as specified in TxDOT Special Specification 1001 may be used to achieve the specified depths or when it's infeasible to stockpile topsoil. Topsoil may also be acquired from another construction site if there is no space to stockpile the topsoil at that site.
- Topsoil shall have an organic content of 10 to 20 percent using ASTM D2974 Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
- Topsoil that does not meet the organic content requirement shall be amended with General Use Compost as specified in TxDOT Special Specification 1001. Amendment should be three parts of topsoil to one part compost by volume thoroughly blended.
- Seed bed should be well pulverized and loosened to a minimum depth of 3 inches and then raked to have a uniform surface.
- When establishing vegetation from seed, groove or furrow slopes steeper than 3:1 on the contour line before seeding.

Plant Selection, Fertilization and Seeding

- Use only high quality, USDA certified seed.
- Use an appropriate species or species mixture adapted to the local climate, onsite soil conditions and the season as shown below, or consult with the local office of the Natural Resource Conservation Service (NRCS) or Texas AgriLife Extension Service for selection of proper species and application technique in this area.
- Seeding rate should be in accordance with the Tables 2.4, 2.5 and 2.6 as follow in this section or as recommended by the Natural Resources Conservation Service (NRCS) or Texas AgriLife Extension Service.
- Chemical fertilization is not recommended at the time of seeding, because it typically stimulates and is consumed by fast growing weeds that out-compete the slower growing grasses and legumes. If the topsoil has not been amended by compost as discussed above, an 0.5 inch layer of General Use Compost (TxDOT Special Specification 1001) is recommended as a surface treatment to protect the seed and provide slow release nutrients
- Evenly apply seed using a seed drill, cultipacker, terraseeding, or hydroseeder.
- Hydro-seeding should not be used on slopes of 5:1 or steeper unless Bonded Fiber Matrix is used.
- Seeded areas shall be thoroughly watered immediately after planting. Water shall be applied at a rate that moistens the top 6 inches of soil without causing runoff. Provide water daily for the first 14 days after seeding and thereafter as needed to aid in establishment of vegetation.
- Use appropriate mulching techniques (*Section 2.5 Mulching*) where necessary, especially during cold periods of the year. Mulch consisting of chipped site vegetation is discouraged, since the wood content may result in depleting nitrogen from the soil.

Sodding

- Use of sod should be limited to planned landscapes due to the relatively high water use of most types of sod grass.
- When sod is necessary to achieve immediate stabilization, buffalograss (*Buchloe dactyloides*) is recommended. Other types of sod may be used in landscaping when specified by a landscape architect for a commercial property or a homebuyer for a residential lot.
- The sod should be mowed prior to sod cutting so that the height of the grass shall not exceed 3 inches and should not be harvested or planted when its moisture condition is so excessively wet or dry that its survival shall be affected.
- Sod shall have a healthy, virile, system of dense, thickly matted roots throughout a minimum soil thickness of 0.75 inch.
- Sod shall be planted within 3 days after it is excavated.
- In areas subject to direct sunlight, pre-moisten prepared sod bed by watering immediately prior to placing sod.
- Sodded areas shall be thoroughly watered immediately after they are planted.

Temporary Vegetation

The following table lists recommended plant species for the North Central Texas region depending on the season for planting.

Table 2.4 Recommended Grass Mixture for Temporary Erosion Control

Season	*Common Name*	*Pure Live Seed Rate (Lbs/Acre)*
Sep 1 - Nov 30	Tall Fescue Western Wheat Grass Wheat (Red, Winter)	4.5 5.6 34.0
May 1 - Aug 31	Foxtail Millet	34.0
Feb 15 – May 31 Sep 1 – Dec 31	Annual Rye	20.0

Areas receiving temporary seeding and vegetation shall be landscaped, re-seeded or sodded with perennial species to establish final vegetation at the end of construction.

Vegetation for Final Stabilization

Sodding or seeding may be used to establish vegetation for final stabilization of areas disturbed by construction activity. The vegetation must achieve a cover that is 70 percent of the native background vegetative cover to be considered final stabilization. Sod will achieve this coverage quicker than seeding; however, sod is usually more expensive than seeding. Sod is most cost-effective for small areas or areas of concentrated flow or heavy pedestrian traffic where it will be difficult to establish vegetation by seeding.

Grass seed for establishing final stabilization can be sown at the same time as seeding for temporary (annual) vegetation. Drought tolerant native vegetation is recommended rather than exotics as a long-term water conservation measure. Native grasses can be planted as seed or placed as sod. Buffalo 609, for example, is a hybrid grass that is placed as sod. Fertilizers are not normally used to establish native grasses, but mulching is effective in retaining soil moisture for the native plants.

Table 2.5 Recommended Grass Mixture for Final Stabilization of Upland in Rural Areas			
County	*Planting Date*	*Clay Soils*	*Sandy Soils*
		Species and Pure Live Seed Rate (Lbs/Acre)	*Species and Pure Live Seed Rate (Lbs/Acre)*
Erath Hood Johnson Palo Pinto Parker Somervell Tarrant Wise	February 1 – May 15	Green Sprangletop 0.3 Sideoats Grama (El Reno) 2.7 Bermudagrass 0.9 Little Bluestem (Native) 1.0 Blue Grama (Hachita) 0.9 Illinois Bundleflower 1.0	Green Sprangletop 0.3 Sand Lovegrass 0.5 Bermudagrass 1.8 Weeping Lovegrass (Ermelo) 0.8 Sand Dropseed 0.4 Partridge Peal 1.0
Collin Dallas Denton Ellis Kaufman Navarro Rockwell	February 1 – May 15	Green Sprangletop 0.3 Bermudagrass 1.2 Sideoats Grama (El Reno) 2.7 Little Bluestem (Native) 2.0 Buffalograss (Texoka) 1.6 Illinois Bundleflower 1.0	Green Sprangletop 0.3 Bermudagrass 1.8 Weeping Lovegrass (Ermelo) 0.6 Sand Lovegrass 0.6 Sand Dropseed 0.4 Partridge Pea 1.0
Hunt	February 1 – May 15	Green Sprangletop 0.3 Sideoats Grama (El Reno) 3.2 Bermudagrass 1.8 Little Bluestem (Native) 1.7 Illinois Bundleflower 1.0	Green Sprangletop 0.3 Bermudagrass 1.5 Bahiagrass (Pensacola) 6.0 Sand Lovegrass 0.6 Weeping Lovegrass (Ermelo) 0.8 Partridge Pea 1.0

(Source: TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, Item 164)

Table 2.6 Recommended Grass Mixture for Final Stabilization of Upland in Urban Areas			
County	*Planting Date*	*Clay Soils*	*Sandy Soils*
		Species and Pure Live Seed Rate (Lbs/Acre)	*Species and Pure Live Seed Rate (Lbs/Acre)*
Erath Hood Johnson Palo Pinto Parker Somervell Tarrant Wise	February 1 – May 15	Green Sprangletop 0.3 Sideoats Grama (El Reno) 3.6 Bermudagrass 2.4 Buffalograss (Texoka) 1.6	Green Sprangletop 0.3 Sideoats Grama (El Reno) 3.6 Bermudagrass 2.1 Sand Dropseed 0.3
Collin Dallas Denton Ellis Kaufman Navarro Rockwell	February 1 – May 15	Green Sprangletop 0.3 Sideoats Grama (El Reno) 3.6 Buffalograss (Texoka) 1.6 Bermudagrass 2.4	Green Sprangletop 0.3 Buffalograss (Texoka) 1.6 Bermudagrass 3.6 Sand Dropseed 0.4
Hunt	February 1 – May 15	Green Sprangletop 0.3 Bermudagrass 2.4 Sideoats Grama (Haskell) 4.5	Green Sprangletop 0.3 Bermudagrass 5.4

(Source: TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, Item 164)

Vegetation for final stabilization of channels requires grasses that are tolerant of periodic inundation, such as Bermuda grass, Kentucky bluegrass or a grass-legume mixture.

Additional Considerations

- Conditions for establishing vegetation vary significantly from site to site. Therefore, specifics of the vegetation design should be prepared based on the soil, slopes, drainage patterns, and the purpose of the vegetation at a each site.
- For construction activities that include landscaping in the development plans, the landscape architect should be consulted when specifying vegetation for temporary or final stabilization of disturbed areas.
- Vegetation is easier to establish if equipment and vehicle traffic is managed onsite to minimize soil compaction by traffic in the disturbed area that will be vegetated.
- Establishing a good vegetative cover is dependent on the season of the year. Projects that commence in the fall of the year may not be candidates for using vegetation as an erosion control.
- Where vegetation is used in swales and channels it may be necessary to use sod, rather than seeding, to establish an erosion resistant surface that accommodates rainfall runoff flows.
- Mulch should be used to enhance vegetative growth, in that mulch protects seeds from heat, prevents soil moisture loss, and provides erosion protection until the vegetation is established. Compost mulch has the additional benefit of providing some slow-release nutrients.
- Fertilizers have both beneficial and adverse effects. Fertilizers provide nutrients to the vegetation, but fertilizers are also a source of unwanted nutrients in streams and lakes. In this latter regard, they are a pollutant. The use of native vegetation rather than exotics reduces the need for fertilizers. Organic fertilizers, such as compost mulch, are generally preferred over chemical fertilizers. They provide a slow release of nutrients over a longer period of time and are less likely to cause environmental problems.
- Steep slopes represent a problem for establishing vegetation. Hydraulic mulches are useful for establishing vegetation on slopes. Refer to *Section 2.5 Mulching*.

2.9.4 Design Guidance and Specifications

Additional criteria for the application of vegetation in channels are in *Section 3.6.3 of the iSWM Criteria Manual* and design guidance is in *Section 3.2 of the Hydraulics Technical Manual*.

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Item 202 Landscaping. Additional specifications for the following components of this item are in the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004):

- Topsoil, Item 160.
- Compost, Item 161.
- Sodding for Erosion Control, Item 162.
- Seeding for Erosion Control, Item 163.
- Fertilization, Item 164.
- Vegetative Watering 165.

2.9.5 Inspection and Maintenance Requirements

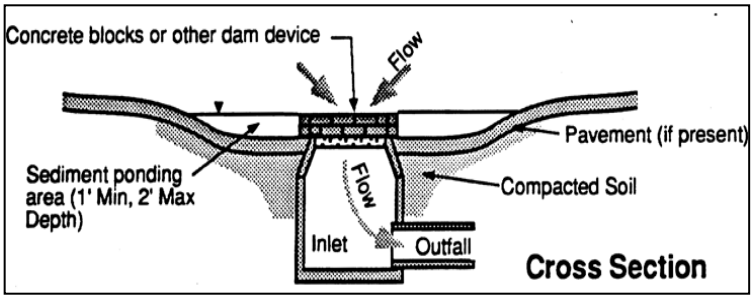
Protect newly seeded areas from excessive runoff and traffic until vegetation is established. Include a watering and fertilizing schedule in the iSWM Construction Plan facilitate the establishment of the vegetation. Vegetation for final stabilization must be maintained until the vegetative cover is 70 percent of the native background vegetative cover.

Vegetation should be inspected regularly (at least as often as required by the TPDES Construction General Permit) to ensure that the plant material is established properly and remains healthy. Bare spots shall be reseeded and/or protected from erosion by mulch or other measures. Accumulated sediment

deposited by runoff should be removed to prevent smothering of the vegetation. In addition, determine the source of excess sediment and implement appropriate measures to control the erosion.

3.4 Inlet Protection

Sediment Control



Description: Inlet protection consists of a variety of methods to intercept sediment at low point inlets through the use of depressed grading, filter stone, filter fabric, inlet inserts, organic filter tubes and other materials. The protection devices are placed around or across the inlet openings to provide localized detention or filtration of sediment and floatable materials in stormwater. Protection devices may be assembled onsite or purchased as manufactured assemblies.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Evaluate drainage patterns to ensure inlet protection will not cause flooding of roadway, property or structures
- Never block entire inlet opening
- Size according to drainage area and flow rates
- Include flow bypass for clogged controls and large storm events

ADVANTAGES / BENEFITS:

- May be the only feasible sediment control when all construction is located within rights-of-way

DISADVANTAGES / LIMITATIONS:

- Limited effectiveness and reliability
- High maintenance requirements
- Has potential to flood roadways or adjacent properties

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Check for and remove blockage of inlet after every storm event
- Remove sediment before it reaches half the design height or volume of the inlet protection, more frequently for curb inlets
- Repair or replace damaged materials
- Clean or replace filter stone and organic filter tubes is when clogged with sediment

TARGETED POLLUTANTS

- ◒ Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier
Channel Protection
Temporary Stabilization
Final Stabilization
Waste Management
Housekeeping Practices

Fe=0.35-0.65
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ● Maintenance
- ○ Training
- ○ Suitability for Slopes > 5%

Other Considerations:

- *Traffic hazards*
- *Passage of larger storm events without causing flooding*
- *Flow diversion to other inlets or drainage points*

3.4.1 Primary Use

Inlet protection is typically used as a secondary sediment barrier, due to its limited effectiveness and numerous disadvantages. It is used to reduce sediment in storm sewer systems by serving as a back-up system for areas that have newly applied erosion controls or for other sediment controls that cannot achieve adequate sediment removal by themselves.

Inlet protection may be used as a primary sediment control only when all other primary controls are infeasible because of site configuration or the type of construction activity.

3.4.2 Applications

Inlet protection is best applied at low point (sump) inlets where stormwater runoff will pond behind the protection measure, and then either filter through the protection measure or flow over a weir created by it. Most inlet protection measures depend on ponding to be effective. These types of inlet protection are not applicable to on-grade curb inlets, where the inlet protection will cause stormwater runoff to bypass the inlet and overload downstream inlets. Only inlet protection measures that allow for use of the inlet opening (e.g. inlet inserts) are applicable as inlet protection for on-grade inlets.

Inlet protection is normally used in new developments with new inlets and roads that are not in public use. It has limited applications in developed areas due to the potential for flooding, traffic safety, pedestrian safety, and maintenance problems. Potential applications in developed areas are on parking lot inlets where water can pond without causing damage and during major repairs to existing roadways where no other controls are viable.

The application of inlet protection is highly variable due to the wide variety of inlet configurations (existing and new) and site conditions. The schematics in Section 6 show example applications; however, applications in most cases must be site adapted. Different methods and materials may be used. It is the responsibility of the designer to ensure that the methods and materials applied for inlet protection are appropriate to the site and flow conditions following the design criteria in Section 3.

3.4.3 Design Criteria

General

- Drainage patterns shall be evaluated to ensure inlet protection will not divert flow or flood the roadway or adjacent properties and structures.
- Inlet protection measures or devices that completed block the inlet are prohibited. They must also include a bypass capability in case the protection measures are clogged.
- Inlet protection must be designed to pass the conveyance storm (25-year, 24-hour) without creating a road hazard or damaging adjacent property. This may be accomplished by any of the following measures:
    - An overflow weir on the protection measure.
    - An existing positive overflow swale on the inlet.
    - Sufficient storage volume around the inlet to hold the ponded water until it can all filter into the inlet.
    - Other engineered method.
- Positive overflow drainage is critical in the design of inlet protection. If overflow is not provided for at the inlet, temporary means shall be provided to route excess flows through established swales, streets, or other watercourses to minimize damage due to flooding.
- Filter fabric and wire mesh used for inlet protection shall meet the material requirements specified in *Section 3.10 Silt Fence*.

- Block and gravel (crushed stone or recycled concrete) protection is used when flows exceed 0.5 cubic feet per second and it is necessary to allow for overtopping to prevent flooding.
- The tube and filler for organic filter tubes shall be in accordance with the criteria in *Section 3.6 Organic Filter Tube*.
- Bags used to secure inlet protection devices on pavement shall be filled with aggregate, filter stone, or crushed rock that is less likely than sand to be washed into an inlet if the bag is broken. Filled bags shall be 24 to 30 inches long, 16 to 18 inches wide, and 6 to 8 inches thick. Bags shall be polypropylene, polyethylene, or polyamide woven fabric with a minimum unit weight of 4 ounces per square yard and meet the following criteria:
    - Greater than 300 psi Mullen Burst Strength using ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method.
    - Greater than 70 percent UV Stability using ASTM D4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus.

Curb Inlet Protection

- Municipality approval is required before installing inlet protection on public streets.
- Special caution must be exercised when installing curb inlet protection on publicly traveled streets or in developed areas. Ensure that inlet protection is properly designed, installed and maintained to avoid flooding of the roadway or adjacent properties and structures.
- A two inch overflow gap or weir is required on all curb inlet protection devices.
- Traffic cones, warning signs, or other measures shall be installed to warn motorists when the inlet protection measures extend beyond the gutter line.
- 2 inch X 4 inch Weir Protection:
    - Bend wire mesh around the 2 inch x 4 inch board and staple to the board. Bend wire mesh around the bottom of the board, the curb opening, and along the pavement to form a cage for the rock.
    - Rock bags shall be placed perpendicular to the curb, at both ends of the wooden frame, to disrupt the flow and direct water into the rock filter. Stack the bags two high if needed.
- Organic Filter Tube Protection:
    - The diameter of the tube shall be at least 2 inches less than the height of the inlet opening. The tube should not be allowed to block the entire opening, since it will clog.
    - The tube shall be placed on 4 inch x 4 inch or 2 inch x 4 inch wire mesh to prevent the tube from sagging into the inlet.
    - The tube should be long enough to extend a minimum of 12 inches past the curb opening on each side of the inlet.
- Hog Wire Weir Protection:
    - The filter fabric and wire mesh shall extend a minimum of 12 inches past the curb opening on each side of the inlet.
    - Filter fabric shall be placed on 2 inch x 4 inch wire mesh to prevent the tube from sagging into the inlet.
    - Rock bags are used to hold the wire mesh and filter fabric in contact with the pavement. At least one bag shall be placed on either side of the opening, parallel to and up against the concrete curb. The bags are in intended to disrupt and slow the flow and ensure it does not go under the fabric. Add bags if needed.

- If a board is used to anchor the wire mesh and fabric instead of rock bags, the board shall be secured with concrete nails at 3 inches on center. Upon removal clean any dirt or debris from the nailing locations, apply chemical sanding agent, and apply non-shrink grout flush with surface of concrete.

- Block and Gravel Protection:
  - Concrete blocks shall be standard 8 inch x 8 inch x 16 inch concrete masonry units and shall be in accordance with ASTM C139, Concrete Masonry Units for Construction. Filter gravel shall be ¾ inch washed stone containing no fines. Angular shaped stone is preferable to rounded shapes.
  - Concrete blocks are to be placed on their sides in a single row around the perimeter of the inlet, with ends abutting. Openings in the blocks should face outward, not upward. ½ inch x ½ inch wire mesh shall then be placed over the outside face of the blocks covering the holes. Filter gravel shall then be piled against the wire mesh to the top of the blocks with the base of the stone being a minimum of 18 inches from the blocks.
  - Alternatively, where loose stone is a concern (streets, etc.), the filter gravel may be placed in appropriately sized filter fabric bags.
  - Periodically, when the gravel filter becomes clogged, the gravel must be removed and cleaned in a proper manner or replaced with new gravel and piled back against the wire mesh.

- Organic Filter Tube On-Grade Protection:
  - Organic filter tubes may be used to provide sediment control at on-grade curb inlets where the tube will not be a traffic hazard, such as on residential streets where the pavement adjacent to the curb is allocated to parked cars. Tubes should not be used in this manner where they will extend into an active travel lane.
  - The filter tube shall be secured in a U-shape by rock bags. Runoff flowing in the gutter will pond within the U until it filters through the tube or overflows around the end.

- Inlet protection shall be phased on curb inlets being constructed. Controls shall be installed on the pipe inlet at the bottom of the catch basin as soon as it is installed and while the inlet box and top are being formed or placed.

Area Inlet Protection

- Installation methods for protection on area inlets vary depending on the type of inlet (drop, "Y," or other) and the type and use of the surface surrounding the inlet (parking lot, playground, etc.). It is the responsibility of the designer to appropriately adapt inlet protection measures and their installation methods for each site condition. Several types may be needed on one project.

- Filter Fabric Protection:
  - Filter fabric protection is appropriate where the drainage area is less than one acre and the basin slope is less than five (5) percent. Filter fabric, posts, and wire mesh shall meet the material requirements specified in *Section 3.10 Silt Fence*.
  - A 6 inch wide trench is to be cut 6 inches deep at the toe of the fence to allow the fabric to be laid below the surface and backfilled with compacted earth or gravel. This entrenchment prevents any bypass of runoff under the fence.
  - Stone overflow structures, according to the criteria in *Section 3.10 Silt Fence* shall be installed where flow to the inlet is concentrated and more than 1 cubic feet per second.

- Excavated Impoundment Protection:
  - Excavated inlet protection is usually the most effective type of area inlet protection; however, it is only applicable to drop inlets. It should not be applied to Y inlets because it will undermine the concrete pad surrounding the inlet opening. Nor can it be used for inlets on pavement.

  - With this protection method, it is necessary to install weep holes to allow the impoundment to drain completely.
  - The impoundment shall be sized such that the volume of excavation is equal to or exceeds the runoff volume from the temporary control design storm (2-year, 24-hour) for the inlet's drainage area.
  - The trap shall have a minimum depth of one foot and a maximum depth of 2 feet as measured from the top of the inlet and shall have side slopes of 2:1 or flatter.

- Block and Gravel Protection:
  - Block and gravel inlet protection is the most stable area inlet protection and can handle more concentrated flows. It may be installed on paved or vegetated surfaces. Loose stone shall be carefully removed from vegetated surfaces at the end of construction to prevent the stone from becoming a mowing hazard.
  - The inlet protection may be one or two blocks high. Single block heights are applicable for drainage areas up to 3 acres in size. The double block height shall be used for larger drainage areas.
  - Concrete blocks shall be standard 8 inch x 8 inch x 16 inch concrete masonry units and shall be in accordance with ASTM C139, Concrete Masonry Units for Construction. Filter gravel shall be ¾ inch washed stone containing no fines. Angular shaped stone is preferable to rounded shapes.
- Organic Filter Tube Protection:
  - Organic filter tubes may be used on paved or unpaved surfaces.
  - On paved surfaces, tubes shall be secured in place by rock bags. On unpaved surfaces, the tubes shall be embedded in the ground a minimum of 3 inches and staked at 4 foot spacing.
  - Designer shall provide calculations and specify the diameter of tube to be used based on the inlet's drainage area and the flow rate of runoff to the inlet. The minimum allowable diameter is 12 inches.

Proprietary Inlet Protection

- Numerous proprietary protection devices are available from commercial vendors. The devices often have the advantage of being reusable on several projects if they are maintained in good condition.
- It is the policy of this manual not to recommend any specific commercial vendors for proprietary controls. However, this subsection is included in order to provide municipalities with a rationale for approving the use of a proprietary inlet protection device within their jurisdiction.
- The designer shall work with the supplier to provide the municipality with flow calculations or independent third-party tests that document the device's performance for conditions similar to the ones in which it is proposed to be installed. The conditions that should be considered include: type and size of inlet, inlet configuration, size of contributing drainage area, design flow rate, soil particle sizes to be removed, and other pollutants to be removed.
- The designer or vendor of the proprietary device shall provide a minimum of three references for projects where the device has been installed and maintained in operation at a construction site for at least six months. Local references are preferred; but references from other regions can be accepted if a similarity between the reference project and the proposed application can be demonstrated.
- Proprietary devices must not completely block the inlet. The device shall have a minimum of a 2 inch wide opening for the length of the inlet when it will be used in areas that water can safely pond to depths deeper than the design depths for the inlet. If ponding is not an option, then the device must have overflow capacity equal to the inlet design flow rate.
- Some proprietary devices are available with replaceable pads or filters. These pads or filters have the added benefit or removing pollutants such as metals and oils in addition to removing sediment.

These types of inserts are recommended in applications where prior or current land use in or adjacent to the construction areas may result in the discharge of pollutants.

- Proprietary protection devices shall be in accordance with the General criteria at the beginning of this section and any criteria listed under Curb Inlet Protection and Area Inlet Protection that are not specific to an inlet protection method.

3.4.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.15 Inlet Protection.

3.4.5 Inspection and Maintenance Requirements

Inlet protection should be inspected regularly (at least as often as required by the TPDES Construction General Permit). Inlet controls should also be inspected after every storm event to check for collapse into the inlet or other damages that may block flow in the inlet. In addition to routine inspection, inlet protection devices should be observed and monitored during larger storm events to verify that they are not ponding or diverting water in a manner that floods a roadway or damages property.

Floatable debris and other trash caught by the inlet protection should be removed after each storm event. Sediment should also be removed from curb inlet protection after each storm event because of the limited storage area associated with curb inlets.

Sediment collected at area inlet protection should be removed before it reaches half the height of the protection device. Sediment should be removed from inlets with excavated impoundment protection before the volume of the excavation is reduced by 50 percent. In addition, the weep holes should be checked and kept clear of blockage.

Concrete blocks, 2 inch x 4 inch boards, stakes, and other materials used to construct inlet protection should be checked for damaged and repaired or replaced if damaged.

When filter fabric or organic filter tubes are used, they should be cleaned or replaced when the material becomes clogged. For systems using filter stone, when the filter stone becomes clogged with sediment, the stones must be pulled away from the inlet and cleaned or replaced.

Because of the potential for inlet protection to divert runoff or cause localized flooding, remove inlet protection as soon as the drainage area contributing runoff to the inlet is stabilized. Ensure that all inlet protection devices are removed at the end of the construction.

3.4.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.

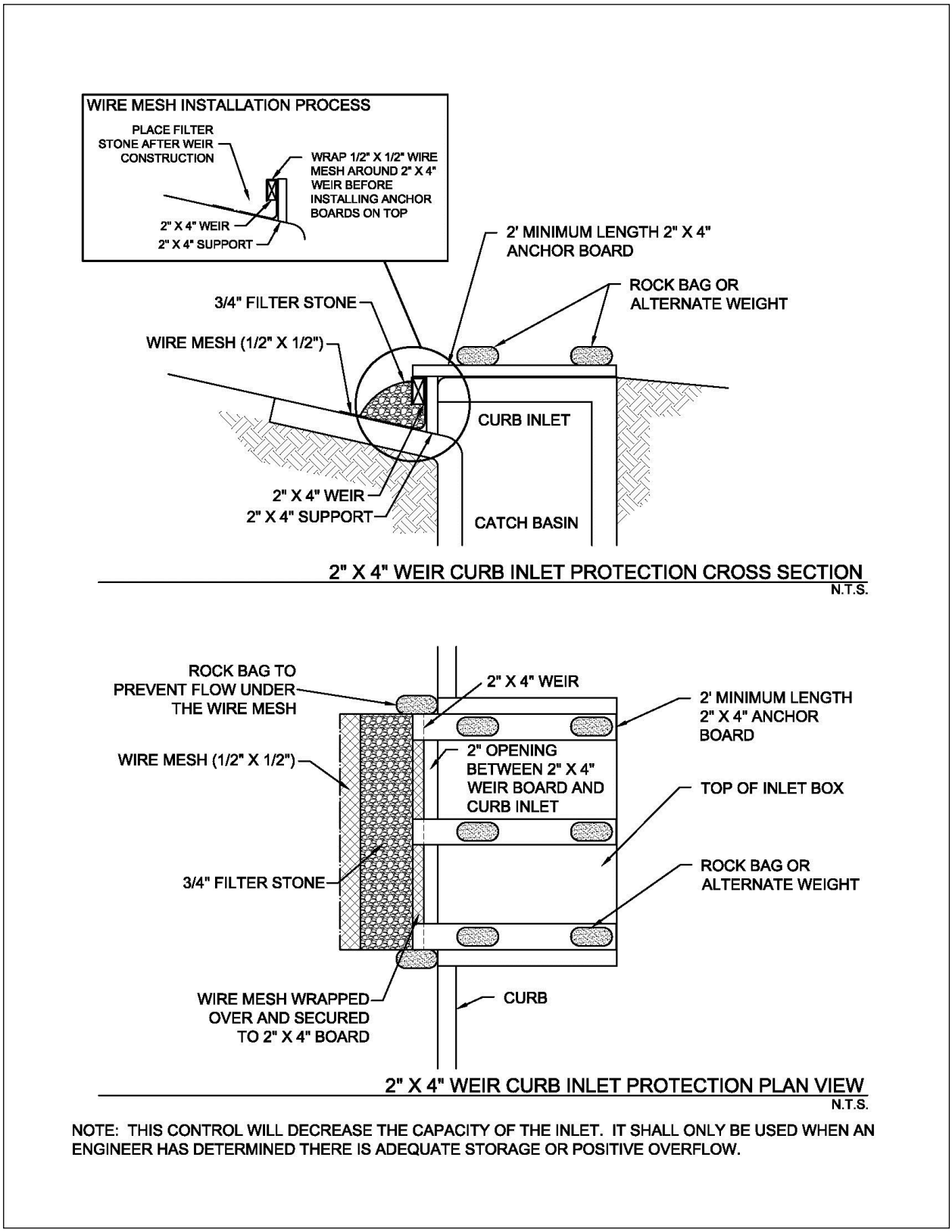
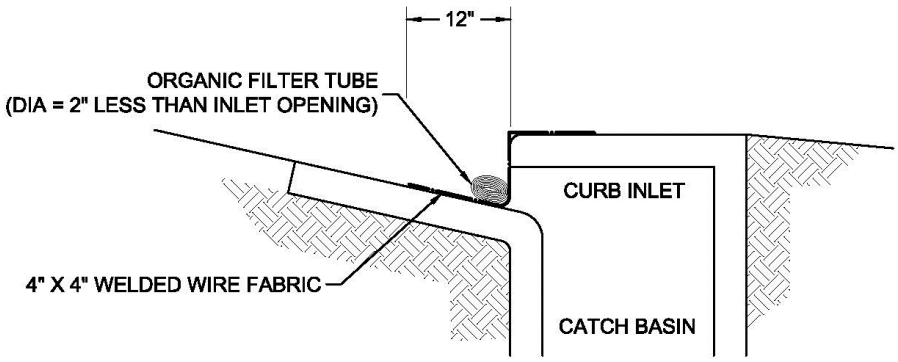
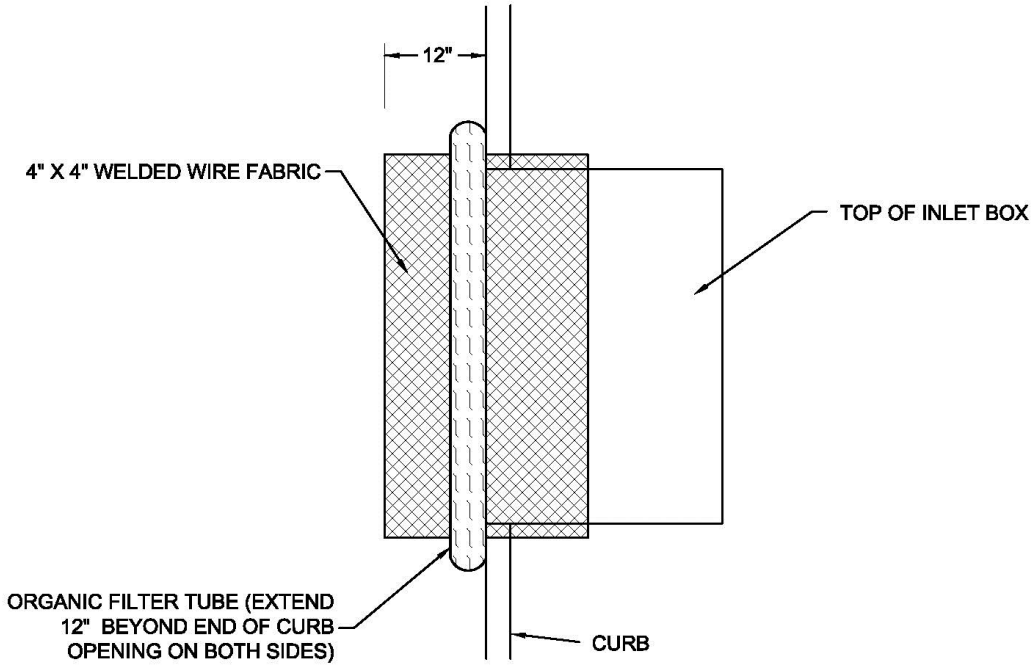


Figure 3.5 Schematics of 2"x4" Weir Curb Inlet Protection
(Source: Modified from Washington Suburban Sanitary Commission Detail SC-16.0)



ORGANIC FILTER TUBE CURB INLET PROTECTION CROSS SECTION
N.T.S.



ORGANIC FILTER TUBE CURB INLET PROTECTION PLAN VIEW
N.T.S.

NOTE: THIS CONTROL WILL DECREASE THE CAPACITY OF THE INLET. IT SHALL ONLY BE USED WHEN AN ENGINEER HAS DETERMINED THERE IS ADEQUATE STORAGE OR POSITIVE OVERFLOW.

Figure 3.6 Schematics of Organic Filter Tube Curb Inlet Protection
(Source: Modified from City of Plano BMP SP-4)

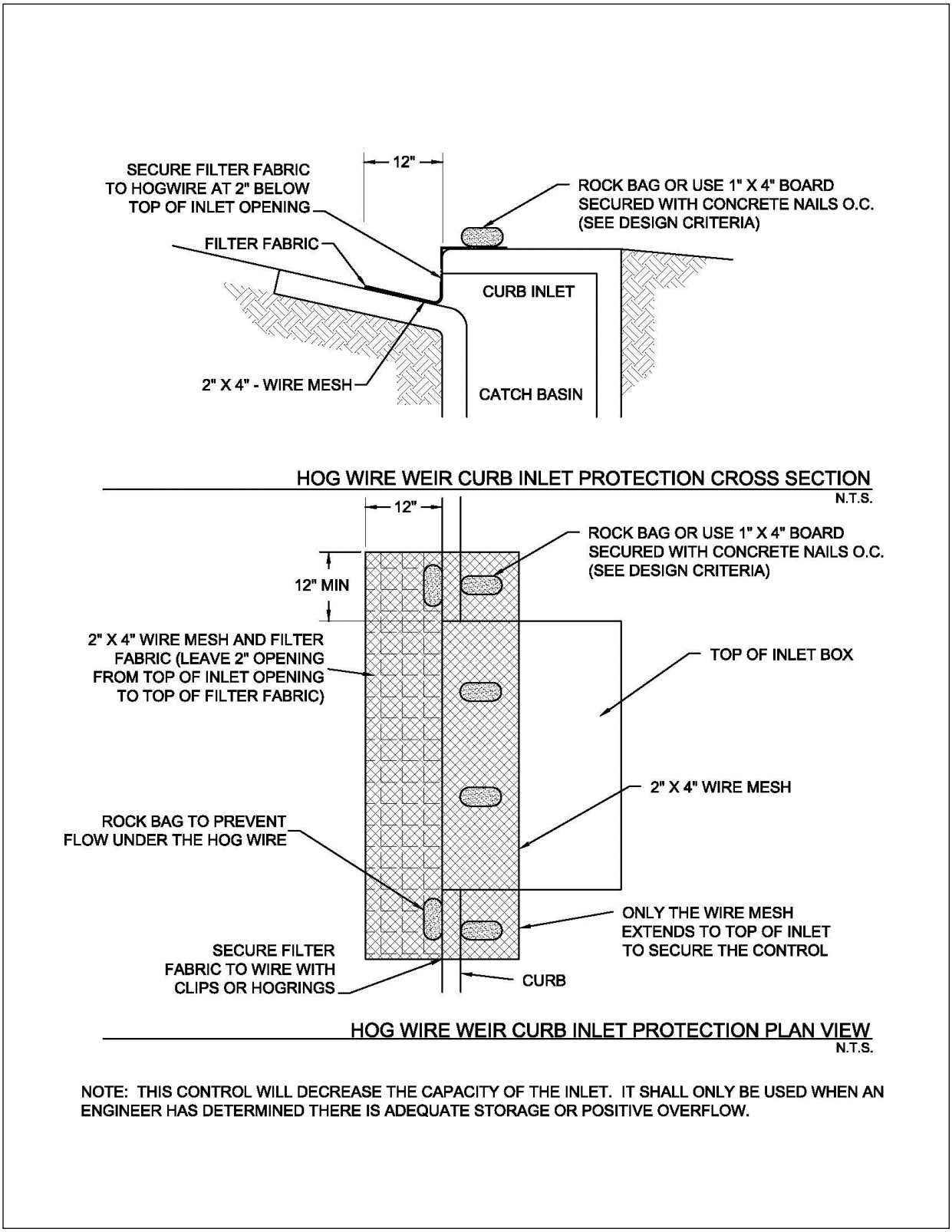
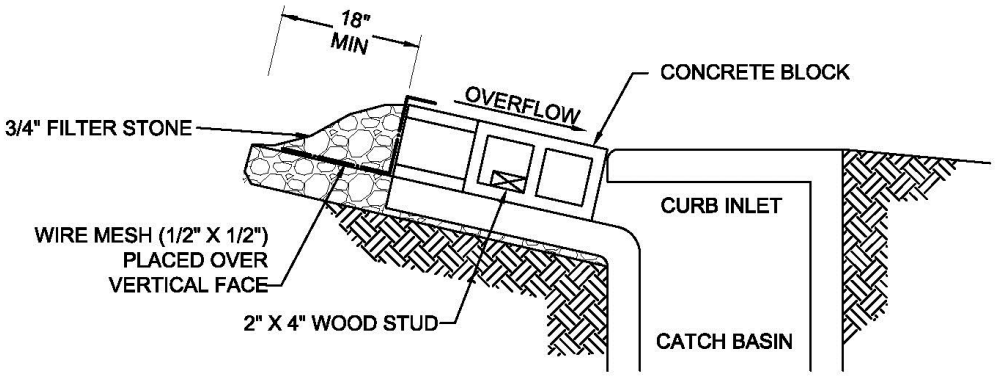
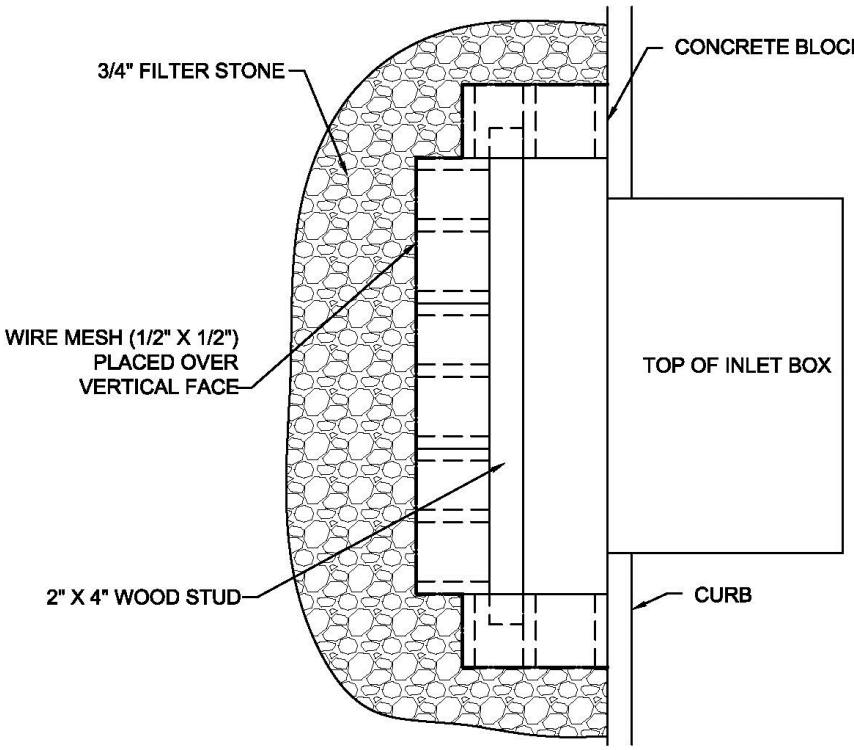


Figure 3.7 Schematics of Hog Wire Weir Curb Inlet Protection
(Source: Modified from City of Round Rock Detail E-03)



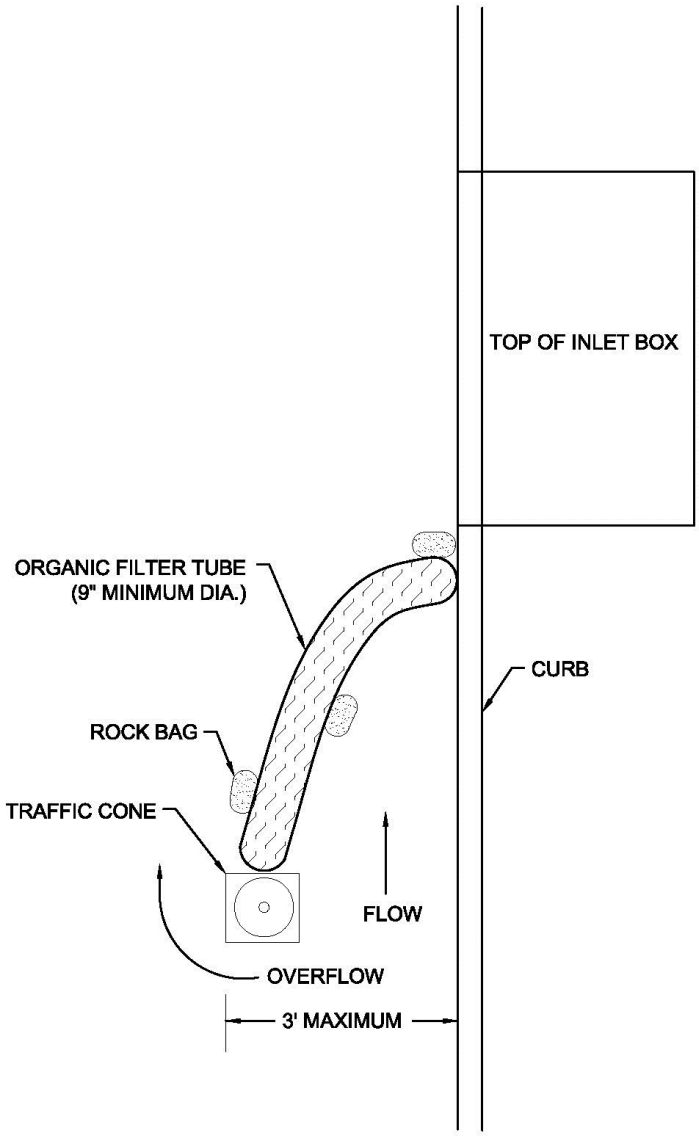
BLOCK AND GRAVEL FILTER CURB INLET PROTECTION CROSS SECTION
N.T.S.



BLOCK AND GRAVEL FILTER CURB INLET PROTECTION PLAN VIEW
N.T.S.

NOTES:
1. DO NOT INSTALL ON INLETS IN A PUBLIC STREET OR OTHER ACTIVE TRAVEL LANE. BLOCK AND GRAVEL FILTER IS INTENDED FOR USE ON LOW POINT (SUMP) INLETS IN PARKING LOTS AND OTHER PAVEMENT THAT IS NOT AN ACTIVE TRAVEL LANE. THIS INLET PROTECTION METHOD ALLOWS FOR FULL USE OF THE INLET DESIGN CAPACITY.
2. INSTALL TRAFFIC CONES AS NEEDED TO MINIMIZE THE POTENTIAL FOR CARS HITTING THE BLOCK AND GRAVEL.

Figure 3.8 Schematics of Block and Gravel Filter Curb Inlet Protection

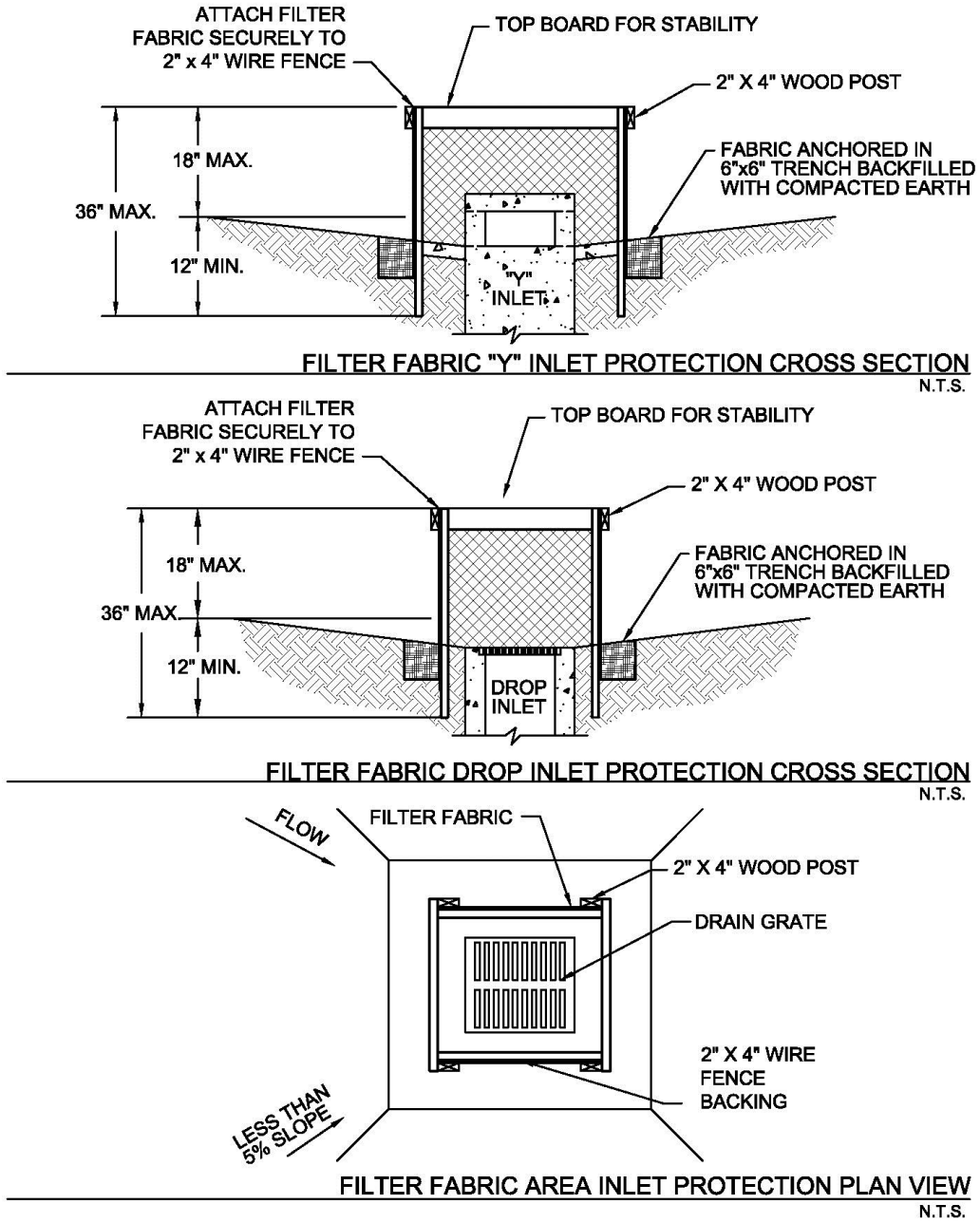


ORGANIC FILTER TUBE ON-GRADE CURB INLET PROTECTION DETAIL

N.T.S.

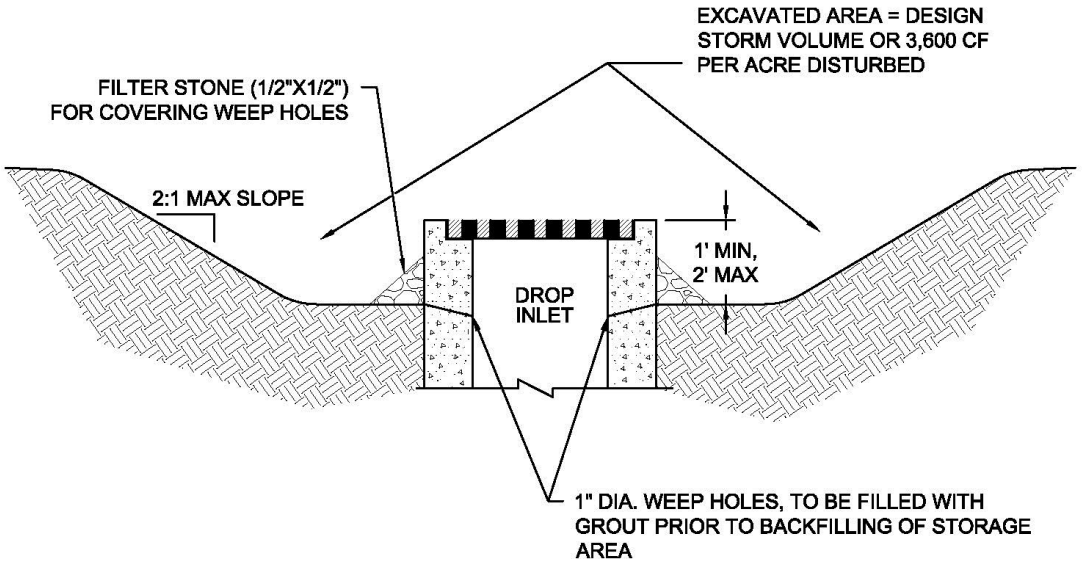
NOTES: 1. THIS DETAIL IS INTENDED FOR USE WITH ON-GRADE INLETS (NOT A LOW POINT) WHERE WATER WOULD BE DIVERTED INSTEAD OF PONDING BEHIND THE OTHER TYPES OF INLET PROTECTION.
2. DO NOT INSTALL ON INLETS WHERE THE ORGANIC FILTER TUBE WOULD EXTEND INTO AN ACTIVE TRAVEL LANE.

Figure 3.9 Schematic of Organic Filter Tube On-Grade Curb Inlet Protection

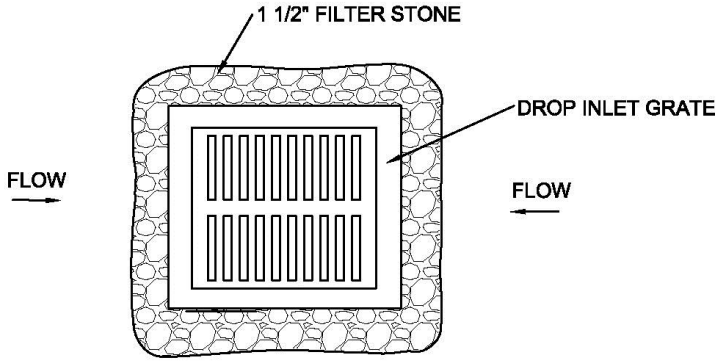


NOTES:
1. CONCENTRATED DITCH FLOW COMING FROM ONE OR MORE SIDES TOWARD THE INLET MAY REQUIRE A STONE OVERFLOW STRUCTURE TO BE CONSTRUCTED ON ONE SIDE OF THE INLET (SEE *SECTION 3.10 SILT FENCE*).
2. POSTS SHALL BE INSTALLED AT EACH CORNER AND BETWEEN CORNERS IF THE DISTANCE IS GREATER THAN 6' BETWEEN CORNER POSTS.

Figure 3.10 Schematics of Filter Fabric Area Inlet Protection
(Source: City of Plano BMP SP-4)

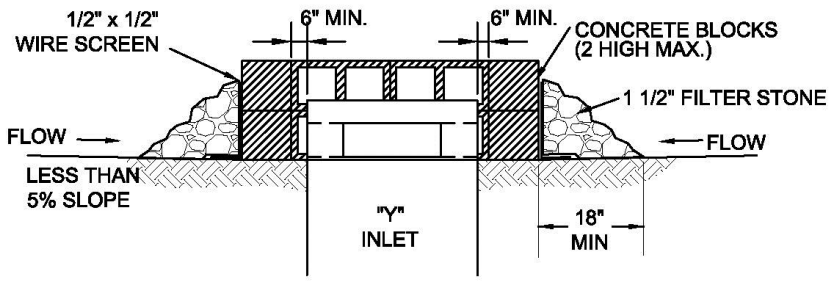


EXCAVATED IMPOUNDMENT DROP INLET PROTECTION CROSS SECTION
N.T.S.

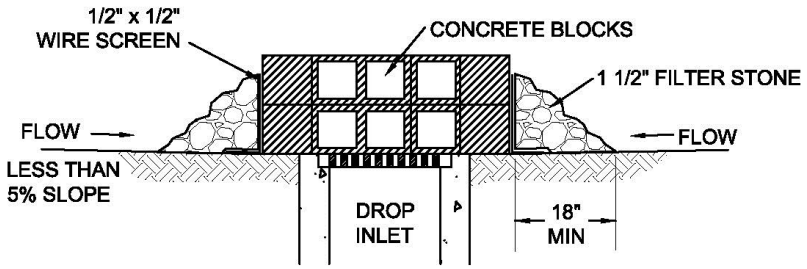


EXCAVATED IMPOUNDMENT AREA INLET PROTECTION PLAN VIEW
N.T.S.

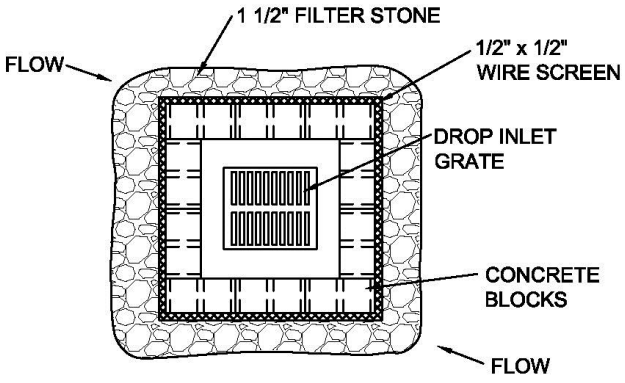
Figure 3.11 Schematics of Excavated Impoundment Area Inlet Protection



BLOCK AND GRAVEL "Y" INLET PROTECTION CROSS SECTION
N.T.S.



BLOCK AND GRAVEL DROP INLET PROTECTION CROSS SECTION
N.T.S.



BLOCK AND GRAVEL AREA INLET PROTECTION PLAN VIEW
N.T.S.

Figure 3.12 Schematics of Block and Gravel Area Inlet Protection
(Source: Modified from City of Plano BMP SP-4)

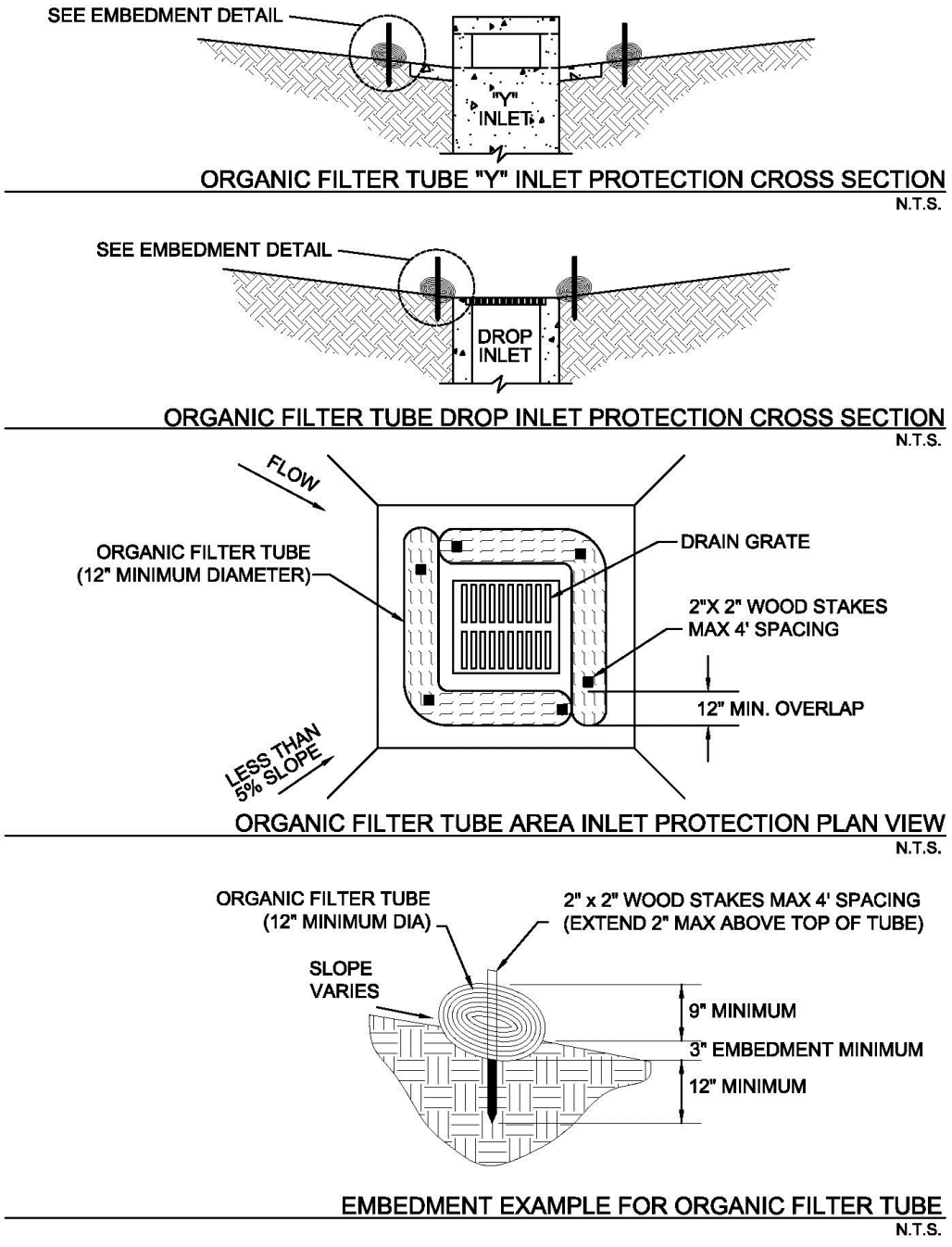
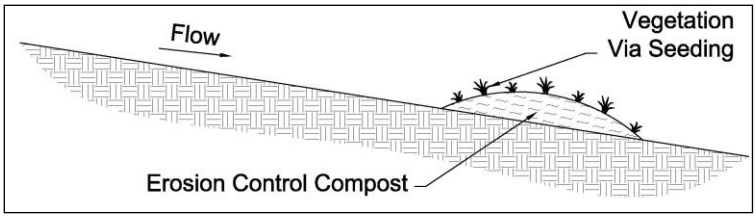


Figure 3.13 Schematics of Organic Filter Tube Area Inlet Protection

3.5 Organic Filter Berm

Sediment Control



Description: Organic filter berms, also called compost filter berms, are linear berms constructed of a mix of compost and wood chips. They are placed on a contour to control runoff. The organic filter berm provides both filtration and time for sediment settling by reducing the velocity of the runoff.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Maximum drainage area of 0.25 acre per 100 linear feet of berm
- Maximum 200 feet distance of flow to silt fence; 50 feet if slope exceeds 10 percent
- 1½ to 3 feet high, top width of 2 to 3 feet, and base of 3 to 5 feet for trapezoidal shaped berms
- 1 to 2 feet high and 2 to 4 feet wide for windrow (triangular) berms

ADVANTAGES / BENEFITS:

- Economical means to trap sediment
- Most effective with coarse to silty soil types
- May be tilled into the soil at end of project, thus adding organic content to the soil

DISADVANTAGES / LIMITATIONS:

- Localized flooding due to minor ponding upslope of the filter berm
- Not for use in swales or low areas where berms will be subject to concentrated flow
- Can interfere with construction operations
- Repeated clogging may require replacement of berm with another control

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Repair undercutting and other failures
- Remove sediment when before it reaches one-half the height of the berm
- Maintain dimensions of the berm by replacing organic filter material when necessary

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.50-0.75
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ● Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations

- *Effects of ponding on adjacent areas and property*

3.5.1 Primary Use

Organic filter berms are used as perimeter controls down slope of disturbed areas and on side slopes where stormwater may runoff the area. They are very well suited to sites with small disturbed drainage areas that are not subjected to concentrated flows and that will ultimately be seeded, sodded, or landscaped.

3.5.2 Applications

Properly designed, the organic filter berm is economical due to the ease of installation and because it can be tilled into the soil at the end of project, limiting the cost of removal and adding to the organic content of the soil. The berms are used as perimeter control devices for both development sites and linear (roadway) type projects. They are most effective with coarse to silty soil types. Additional controls, such as a passive treatment system, may be needed to remove fine silts and clay soils suspended in stormwater.

3.5.3 Design Criteria

- Filter berms are to be constructed along a line of constant elevation (along a contour line) where possible.
- Berms can interfere with construction operations; therefore planning of access routes onto the site is critical.
- Maximum drainage area shall be 0.25 acre per 100 linear feet of filter berm.
- Maximum flow to any 20 foot section of filter berm shall be 1cubic feet per second.
- Maximum distance of flow to berm shall be 200 feet or less. If the slope exceeds 10 percent the flow distance shall be less than 50 feet.
- Maximum slope adjacent to the filter berm shall be 4:1.
- Trapezoidal shaped berms should be 1½ to 3 feet high with a top width of 2 to 3 feet and a base of 3 to 6 feet wide.
- Windrow (triangular) shaped berms should be 1 to 2 feet high and 2 to 4 feet wide.
- Berm side slopes shall be 2:1 or flatter.
- Roughen the soil surface before placing the berm to increase adherence of the compost.
- Compost shall conform to the requirements for Erosion Control Compost in Item 161 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004).
- Organic filter berms should be stabilized by seeding if there are no other sediment controls down slope of the filter berm. Seeding shall be as specified in *Section 2.9 Vegetation* at a seed loading of 1 lb. per 10 linear feet for small berms (1ft. by 2 ft.) or 2.25 lbs per 10 linear ft. for larger berms (1.5 ft. by 3 ft.)

3.5.4 Design Guidance and Specifications

Specifications for Erosion Control Compost to be used as filter material may be found in Item 161 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004).

3.5.5 Inspection and Maintenance Requirements

Filter berms should be inspected regularly (at least as often as required by the TPDES Construction General Permit) for buildup of excess sediment, undercutting, and other failures. Silt must be removed

when before it reaches half the height of the berm. Silt may be raked from the disturbed side of the device to clean side the berm for the first few times that it becomes clogged to prevent ponding. Repeated clogging of the berm at one location will require replacement of the organic filter material or may require installation of another control to prevent failure of the berm.

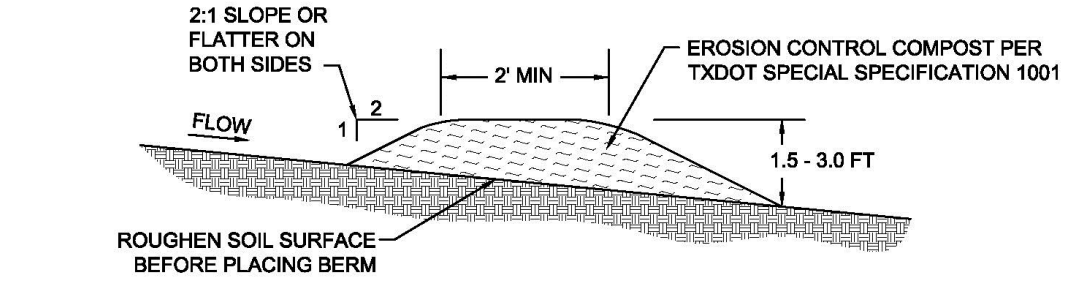
Dimensions of the berm must be maintained by replacing organic filter material when necessary. Typically excess material is stockpiled onsite for repairs to berms disturbed by construction activity.

There shall be no signs of erosion, breeching or runoff around or under the berm.

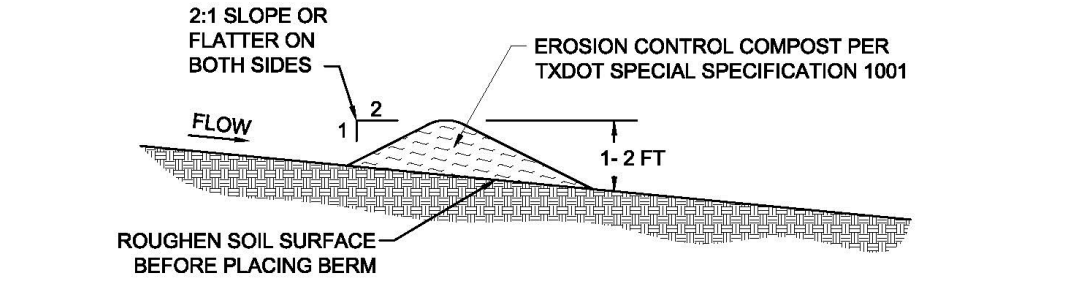
3.5.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.



TRAPEZOIDAL SHAPED ORGANIC FILTER BERM
N.T.S.



TRIANGULAR SHAPED ORGANIC FILTER BERM
N.T.S.

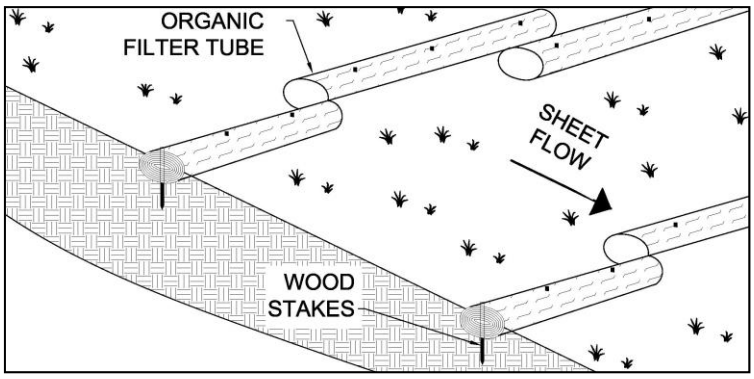
NOTE: DIMENSIONS OF THE BERM SHALL BE DESIGNED BASED ON FLOW CONDITIONS. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS TO DESIGN THE SWALE:

- SIZE OF CONTRIBUTING DRAINAGE AREA
- DESIGN STORM
- FLOW RATE
- BERM HEIGHT AND WIDTH

Figure 3.14 Schematics of Organic Filter Berm

3.6 Organic Filter Tubes

Sediment Control



Description: Organic filter tubes are comprised of an open weave, mesh tube that is filled with a filter material (compost, wood chips, straw, coir, aspen fiber, or a mixture of materials). The tube may be constructed of geosynthetic material, plastic, or natural materials. Organic filter tubes are also called fiber rolls, fiber logs, wattles, mulch socks, and/or coir rolls. Filter tubes detain flow and capture sediment as linear controls along the contours of a slope or as a perimeter control down-slope of a disturbed area.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Tube diameter when filled shall be specified on the plans
- 3 inch minimum embedment in soil
- 18 inch minimum overlap at ends of tubes
- Spacing based on drainage area and slope
- Must be staked on soil and secured with rockbags on pavement
- Turn ends of tube lines upslope a minimum of 10 feet

ADVANTAGES / BENEFITS:

- Effective means to treat sheet flow over a short distance
- Relatively easy to install
- May be used on steep slopes
- Can provide perimeter control on paved surfaces or where soil type prevents embedment of other controls
- Work well as perimeter controls around stockpiles

DISADVANTAGES / LIMITATIONS:

- Difficult to remove when wet and/or filled with sediment
- Relatively small effective areas for sediment capture

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Repair eroded areas underneath the organic filter tubes
- Re-align and stake tubes that are dislodged by flow
- Remove sediment before it reaches half the height of the exposed tube

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ◒ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.50-0.75
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *None*

3.6.1 Primary Use

Organic filter tubes are long, flexible controls that are used along a line of constant elevation (along a contour) on slopes. They are used as perimeter controls down slope of disturbed areas, around temporary stockpiles and on side slopes where stormwater may runoff the area. The tubes maintain sheet flow, slow velocities, and capture sediment. When used in series on slopes, they also shorten the slope length and protect the slope from erosion.

3.6.2 Applications

Organic filter tubes include a wide variety of tube and filter materials. Organic filter tubes are used as a perimeter sediment barrier, similar to silt fence, for development projects and linear projects, such as roadways and utilities. They work well on individual residential lots and on lots being re-developed, where space may be limited. Organic filter tubes are most effective with coarse to silty soil types. Additional controls may be needed to remove fine silts and clay soils suspended in stormwater.

Organic filter tubes can be used on paved surfaces where it's not possible to stake a silt fence. Applications on paved surfaces include perimeter controls for soil stockpiles, pavement repair areas, utility trenching, and building demolition. When compost filter material is used in tubes on pavement, the material has the added benefit of removing some oil and grease from stormwater runoff.

Applications on slopes include temporary sediment control during construction and erosion control of the disturbed soil on the slope. Organic filter tubes may be used to control sheet flow on slopes when final stabilization measures are being applied and established.

Organic filter tubes may also be used for inlet protection and, in limited cases, as check dams in small drainage swales. Refer to *Section 3.4 Inlet Protection* and *Section 2.1 Check Dam* for the design criteria to use organic filter tubes in these applications.

3.6.3 Design Criteria

General Criteria

- Filter tubes should be installed along the contour.
- Tubes shall be staked with 2 inch by 2 inch wooden stakes at a maximum spacing of 4 feet. Rebar or similar metal stakes may be used instead of wooden stakes.
- When placed on pavement, sand or rock bags shall be placed abutting the down-slope side of the tubes to prevent runoff from dislodging the tubes. At a minimum, bags shall be placed one foot from each end of the tube and at the middle of the tube.
- Filter tubes shall be embedded a minimum of three inches when placed on soil. Placement on rock shall be designed as placement on pavement.
- The end of tubes shall overlap a minimum of 18 inches when multiple tubes are connected to form a linear control along a contour or a perimeter.
- Loose mulch material shall be placed against the log on the upstream side to facilitate contact with the ground.
- The last 10 feet (or more) at the ends of a line of tubes shall be turned upslope to prevent bypass by stormwater. Additional upslope lengths of tubes may be needed every 200 to 400 linear feet, depending on the traverse slope along the line of tubes.
- The most common sizes of tubes are 6 to 24 inches in diameter; however, tubes are available in sizes as small as 4 inches and up to 36 inches in diameter. The designer shall specify a diameter based on the site application. Tubes less than 8 inches in diameter when filled will require more frequent maintenance if used.

- Manufactured organic filter tube products shall have documentation of a minimum 75 percent soil retention using ASTM D7351 Standard Test Method for Determination of Sediment Retention Device Effectiveness in Sheet Flow Applications.
- When using manufactured tubes, the manufacturer's recommendations for diameter and spacing based on slope, flow velocities, and other site conditions shall be followed when they are more stringent than the design criteria in this section.
- When used as a perimeter control on grades of 10:1 or less, criteria in the following table shall be used as a guide for the size and installation rate of the organic filter tube.

Table 3.1 Perimeter Control Applications*

Drainage Area (Max)	*Max Flow Length to the Tube*	*Tube Diameter (Min)*
1/3 Acre per 100 feet	145 feet	18 inches
1/4 Acre per 100 feet	110 feet	15 inches
1/5 Acre per 100 feet	85 feet	12 inches
1/8 Acre per 100 feet	55 feet	9 inches

(Source: Modified and expanded from City of Plano Fact Sheet SP-13)
*Applicable on grades of 10:1 or flatter.

- When installing organic filter tubes along contours on slopes, criteria in the following table shall be used as a general guide for size and spacing of the tubes. Actual tube diameter and spacing shall be specified by the designer. The designer shall consider the tube manufacturers recommendations, the soil type, flow volume on the slope, required performance life, and erosion control measures that may be used in conjunction with the tubes.

Table 3.2 Maximum Spacing for Slope Protection

	Tube Diameter (Min)			
Slope (H:V)	*9 Inches*	*12 Inches*	*18 Inches*	*24 Inches*
5:1 to 10:1	35 feet	40 feet	55 feet	60 feet
4:1	30 feet	40 feet	50 feet	50 feet
3:1	25 feet	35 feet	40 feet	40 feet
2:1	20 feet	25 feet	30 feet	30 feet
1:1	10 feet	15 feet	20 feet	20 feet

(Source: Modified and expanded from Iowa Statewide Urban Design and Specifications Standards for Filter Socks)

Tube Material

- The designer shall specify the type of mesh based on the required life of the tube. At a minimum, the mesh shall have a rated life of one year under field conditions.
- If the tubes will be left onsite as part of the final stabilization, they must be constructed of 100 percent biodegradable jute, coir, sisal or similar natural fiber or 100 percent UV photodegradable plastic, polyester or geosynthetic material.
- Mesh tubes may be oval or round in cross-section.
- Mesh for the tubes shall be open and evenly woven. Size of weave openings shall be specified based on filter material. Openings may range from ½ inch for Erosion Control Compost to 2 inches for straw and coir.
- Mesh openings should not exceed ½ inch in diameter.

Filter Material

- Different filter materials have different properties and will affect sheet flow differently. The designer shall specify the type of material to be used (or excluded) on a particular site.
- Straw filter material shall be Certified Weed Free Forage. The straw must be in good condition, air-dried, and not rotten or moldy.
- Compost shall conform to the requirements for Erosion Control Compost in Item 161 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004).
- Compost may provide some oil and grease removal; however, the large percentage of fines in compost will result in less filtering and more ponding of stormwater.
- Wood chips shall be 100 percent untreated chips and free of inorganic debris, such as plastic, glass, metal, etc. Wood chip size shall not be smaller than 1 inch and shall not exceed 3 inches in diameter. Shavings shall not be more than 5% of the total mass.

3.6.4 Design Guidance and Specifications

Specifications for Erosion Control Compost to be used as filter material may be found in Item 161 of the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (TxDOT 2004).

3.6.5 Inspection and Maintenance Requirements

Organic filter tubes should be inspected regularly (at least as often as required by the TPDES Construction General Permit). The filter tube should be checked to ensure that it is in continuous contact with the soil at the bottom of the embedment trench. Closely check for rill erosion that may develop under the filter tubes. Eroded spots must be repaired and monitored to prevent reoccurrence. If erosion under the tube continues, additional controls are needed.

Staking shall be checked to ensure that the filter tubes are not moving due to stormwater runoff. Repair and re-stake slumping filter tubes. Tubes that are split, torn or unraveling shall be repaired or replaced.

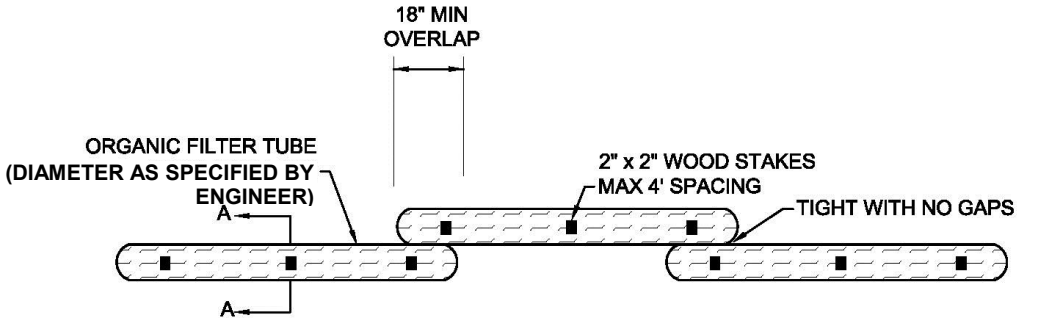
Check the filter tube material to make sure that it has not become clogged with sediment or debris. Clogged filter tubes usually lead to standing water behind the filter tube after the rain event. Sediment shall be removed from behind the filter tube before it reaches half the height of the exposed portion of the tube.

When sediment control is no longer needed on the site, the tubes may be split open and the filter material may be used for mulching during establishment of vegetation for final stabilization if it meets the criteria in *Section 2.5 Mulching*.

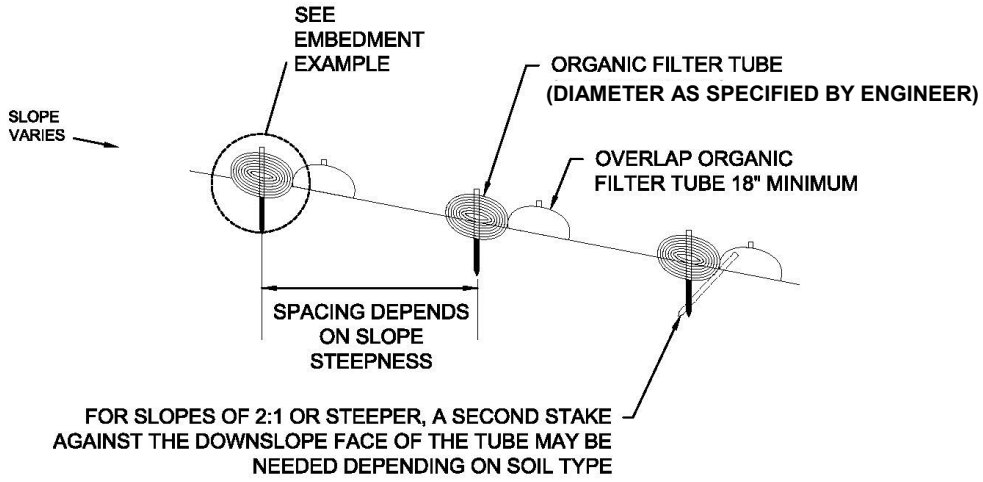
3.6.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.



ORGANIC FILTER TUBE PERIMETER CONTROL PLAN VIEW
N.T.S.



ORGANIC FILTER TUBE SLOPE PROTECTION PROFILE
N.T.S.

NOTES:

1. TYPE OF NETTING, FILTER MATERIAL, DIAMETER OF TUBE, AND SPACING OF TUBES SHALL BE SPECIFIED BY THE DESIGNER BASED ON THE FOLLOWING SITE PARAMETERS.
   - SIZE OF CONTRIBUTING DRAINAGE AREA
   - STEEPNESS OF SLOPE
   - GROUND CONDITIONS (SOIL OR PAVEMENT)
2. DESIGNER SHALL SHOW ON THE DRAWINGS THE LOCATIONS WHERE TUBES ARE TO BE TURNED UPSLOPE. UPSLOPE LENGTHS SHALL BE MINIMUM OF 10 FEET.

Figure 3.15 Schematics of Organic Filter Tubes

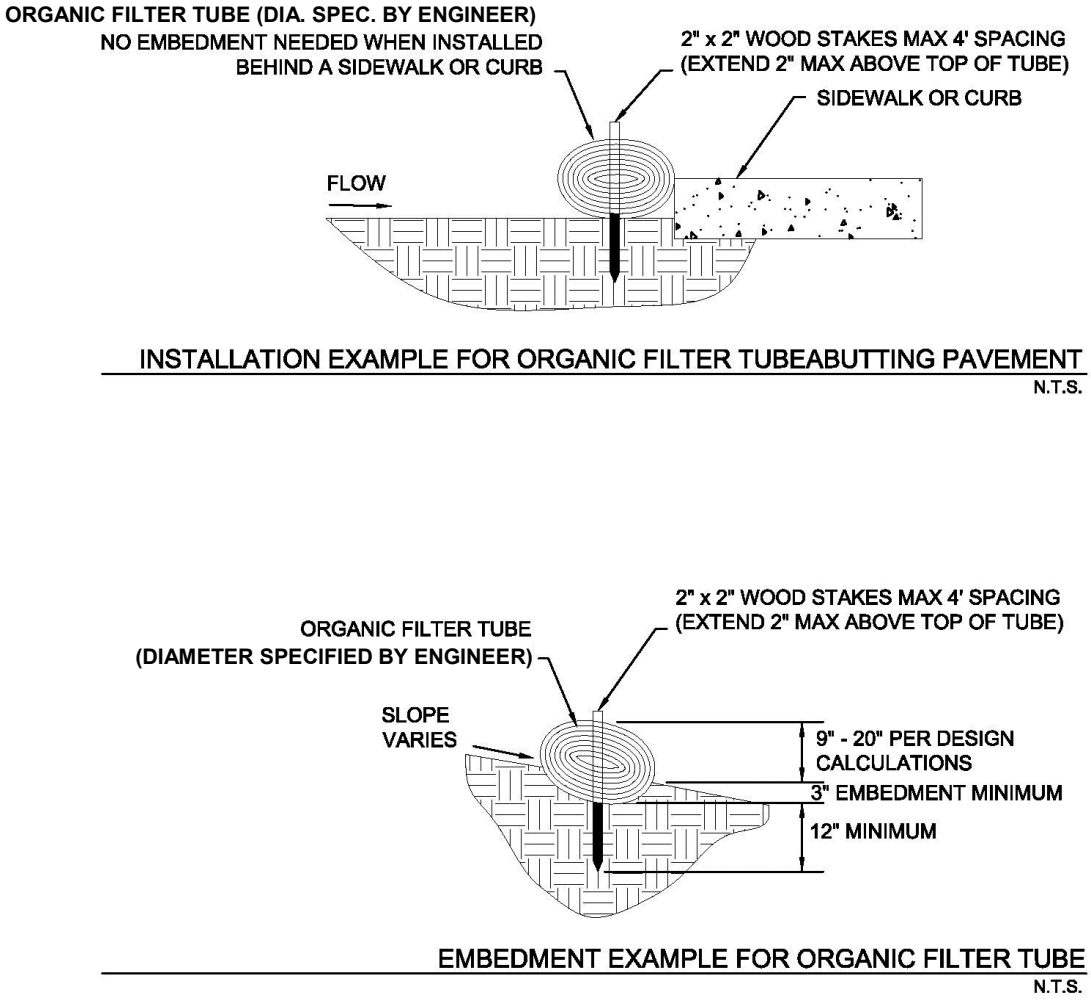
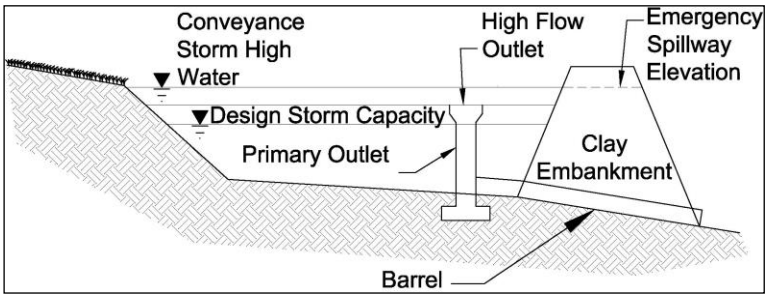


Figure 3.16 Examples of Organic Filter Tube Installation Methods

3.9 Sediment Basin

Sediment Control



Description: A sediment basin is an embankment with a controlled outlet that detains stormwater runoff, resulting in the settling of suspended sediment. The basin provides treatment for the runoff as well as detention and controlled release of runoff, decreasing erosion and flood impacts downstream.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Minimum 4:1 length to width ratio
- Maximum embankment height and storage capacity limited by TCEQ requirements
- Minimum dewatering time of 36 hours
- Safely pass 25-year, 24-hour storm event without structure damage

ADVANTAGES / BENEFITS:

- Effective at removing suspended sand and loam
- May be both a temporary and permanent control
- Can be used in combination with passive treatment

DISADVANTAGES / LIMITATIONS:

- Effectiveness depends on type of outlet
- Limited effectiveness in removing fine silt and clay
- May require a relatively large portion of the site
- Storm events that exceed the design storm event may damage the structure and cause downstream impacts

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Remove obstructions from discharge structures
- Remove sediment and re-grade basin when storage capacity reduced by 20 percent

TARGETED POLLUTANTS

- ● Sediment
- ◒ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control

Slope Protection

Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.50-0.90
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ● Capital Costs
- ◒ Maintenance
- ○ Training
- ● Suitability for Slopes > 5%

Other Considerations:

- *Public safety*
- *Mosquito breeding habitat*
- *Requires comprehensive planning and design*

3.9.1 Primary Use

Sediment basins should be used for all sites with adequate open space for a basin and where the site topography directs a majority of the site drainage to one point. Sediment basins are necessary as either temporary or permanent controls for sites with disturbed areas of 10 acres and larger that are part of a common drainage area unless specific site conditions limit their use.

3.9.2 Applications

Sediment basins serve as treatment devices that can be used on a variety of project types. They are normally used in site development projects in which large areas of land are available for the basin, a minor stream or off-line drainage way crosses the site, or a specific water feature is planned for the site. Sediment basins are highly effective at reducing sediment and other pollutants for design storm conditions. Sediment basins are typically easier to maintain than other structural controls (e.g. silt fences, etc).

A sediment basin by itself does not typically remove a sufficient percentage of fine silts and clays to be an effective sediment barrier. Table 3.3 provides a summary of sediment basin effectiveness based on soil type.

Table 3.3 Sediment Basin Effectiveness for Different Soil Types

Soil Type	*Runoff Potential*	*Settling Rate*	*Sediment Basin Effectiveness*	*Efficiency Rating (Fe)*
Sand	Low	High	High	0.90
Sandy Loam	Low	High	High	0.90
Sandy Silt Loam	Moderate	Moderate	Moderate	0.75
Silt Loam	Moderate	Moderate	Moderate	0.75
Silty Clay Loam	Moderate	Low	Low	0.75
Clay Loam	Great	Low	Low	0.50
Clay	Great	Low	Low	0.50

(Source: Michigan Department of Environmental Quality Soil Erosion and Sedimentation Control Training Manual)

When the disturbed area contains a high percentage of fine silt or clay soil types, the sediment basin may be used with a passive or active treatment system to remove these finer suspended solids. Design criteria may be found in *Section 3.1 Active Treatment System* and *Section 3.7 Passive Treatment System*.

3.9.3 Design Criteria

Texas Administrative Code Title 30, Chapter 299 (30 TAC 299), Dams and Reservoirs, contains specific requirements for dams that:

- Have a height greater than or equal to 25 feet and a maximum storage capacity greater than or equal to 15 acre-feet; or
- Have a height greater than six feet and a maximum storage capacity greater than or equal to 50 acre feet.

If the size of the detention basin meets or exceeds the above applicability, the design must be in accordance with state criteria, and the final construction plans and specifications must be submitted to the TCEQ for review and approval.

The following design criteria are for temporary sediment basins that are smaller than the TCEQ thresholds. The sediment basin shall be designed by a licensed engineer in the State of Texas. The criteria and schematics are the minimum and, in some cases, only concept level. It is the responsibility of the engineer to design and size the embankment, outfall structures, overflow spillway, and downstream

energy dissipaters and stabilization measures. Alternative designs may be acceptable if submitted to the reviewing municipality with supporting design calculations.

Sediment Basin Location and Planning

- Design of the sediment basin should be coordinated with design of the permanent drainage infrastructure for the development.
- The basin shall not be located within a mapped 100-year floodplain unless its effects on the floodplain are modeled, and the model results are approved by the reviewing municipality.
- Basins shall not be located on a live stream that conveys stormwater from upslope property through the construction site.
- Basins may be located at the discharge point of a drainage swale that collects runoff from construction activities, or the basin may be located off-channel with a swale or dike constructed to divert runoff from disturbed areas to the basin. Design criteria for these controls are in *Section 2.2 Diversion Dike* and *Section 2.4 Interceptor Swale*.
- Sediment basins must be designed, constructed, and maintained to minimize mosquito breeding habitats by minimizing the creation of standing water.
- Temporary stabilization measures should be specified for all areas disturbed to create the basin.

Basin Size

- Minimum capacity of the basin shall be the calculated volume of runoff from a 2-year, 24-hour duration storm event plus sediment storage capacity of at least 1,000 cubic feet.
- The basin must be laid out such that the effective flow length to width ratio of the basin is a minimum of 4:1. Settling efficiencies are dependent on flow velocity, basin length, and soil type. Smaller particle sizes require slower velocities and longer basins. Basin dimensions should be designed based on flow velocities and anticipated particle sizes.
- Stoke's equation for settling velocities, as modified to Newton's equation for turbulent flow, may be used to estimate length required based on depth of the basin.

  Settling Velocity (ft/s) = 1.74 $[(\rho_p - \rho)gd/\rho]^{1/2}$ **(3.1)**

  Where:

  ρ_p = density of particles (lb/ ft^3)

  ρ = density of water (lb/ft^3)

  g = gravitational acceleration (ft/s^2)

  d = diameter of particles (ft)
- The effective length of sediment basins may be increased with baffles. Baffles shall be spaced at a minimum distance of 100 feet. Spacing should be proportional to the flow rate, with greater spacing for higher flow rates. Check the flow velocity in the cross section created by the baffles to ensure settling will occur.
- Baffles may be constructed by using excavated soil to create a series of berms within the basin; however, porous baffles are recommended. Porous baffles may consist of coir fiber, porous geotextiles, porous turbidity barriers, and similar materials. Porous materials disrupt the flow patterns, decrease velocities, and increase sedimentation.
- Basins have limited effectiveness on suspended clay soil particles. The basin's length to width ratio typically should be 10:1 to effectively remove suspended clay particles. The use of passive treatment systems can significantly reduce this ratio and improve removal rates. Criteria are in *Section 3.7 Passive Treatment System*.

Embankment

- Top width shall be determined by the engineer based on the total height of the embankment as measured from the toe of the slope on the downstream side.
- Embankment side slopes shall be 3:1 or flatter.
- The embankment shall be constructed with clay soil, minimum Plasticity Index of 30 using ASTM D4318 Standard Test for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- Clay soil for the embankment shall be placed in 8 inch lifts and compacted to 95 percent Standard Proctor Density at optimum moisture content using ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.
- The embankment should be stabilized with rock riprap or temporary vegetation.

Outlet and Spillway

- The primary outlet shall have a minimum design dewatering time of 36 hours for the temporary control design storm (2-year, 24-hour).
- Whenever possible, the outlet shall be designed to drain the basin in less than 72 hours to minimize the potential for breeding mosquitoes.
- The basin's primary outlet and spillway shall be sized to pass the difference between the conveyance storm (25-year, 24-hour) and the temporary control design storm without causing damage to the embankment and structures.
- Unless infeasible, the primary outlet structure should withdraw water from the surface of the impounded water. Outlet structures that do this include surface skimmers, solid risers (non-perforated), flashboard risers, and weirs.
- Surface skimmers use a floating orifice to discharge water from the basin. Skimmers have the advantage of being able to completely drain the detention basin. Skimmers typically result in the greatest sediment removal efficiency for a basin, because they allow for a slower discharge rate than other types of surface outlets. Due to this slower discharge rate, a high flow riser may still be needed to discharge the conveyance storm if a large enough spillway is not feasible due to site constraints.
- Discharge rates for surface skimmers are dependent on the orifice configuration in the skimmer. Use manufacturer's flow rate charts to select the skimmer based on the flow rate needed to discharge the design storm from the basin within a selected time period (i.e. Q=Volume/time).
- Risers shall be designed using the procedures in *Section 3.9.7 Design Procedures*.
- Weir outlets should be designed using the guidance in *Section 2.2.2 of the Hydraulics Technical Manual*.
- Use of overflow risers and weirs result in a pool of water that should be accounted for in the design capacity of the basin. These outlet structures are good options when the temporary sediment basin will be retained as a permanent site feature upon completion of construction. If the basin is temporary and standing water is not acceptable during construction, the construction plans shall include procedures for dewatering the basin following criteria in *Section 3.3 Dewatering Controls*.
- Flashboard risers function like an overflow riser pipe, but they contain a series of boards that allow for adjustment of the pool level. The boards may be removed for draining the basin to a lower level. However, this operation can be difficult and a safety hazard when done manually.
- A perforated riser may be used as an outlet when surface discharge is not feasible. A perforated rise has the advantage of dewatering the basin; however, it also results in the lowest sediment removal efficiency. Perforated risers provide a relatively rapid drawdown of the pool, and they discharge water from the entire water column, resulting in more suspended sediment being discharged than with a surface outlet.

- Size and spacing of the orifices on a perforated riser shall be designed to provide the minimum detention time while allowing for the drawdown of detained water.
- Gravel (1½ to 3 inches) may be placed around the perforated riser to aid sediment removal, particularly the removal of fine soil particles, and to keep trash from plugging the perforations. The gravel is most effective when the basin will be used for less than a year. When installed for longer periods of time, the gravel may become clogged with fine sediments and require cleaning while submerged.
- The outlet of the outfall pipe (barrel) shall be stabilized with riprap or other materials designed using the conveyance storm flow rate and velocity. Velocity dissipation measures shall be used to reduce outfall velocities in excess of 5 feet per second.
- The outfall pipe through the embankment shall be provided with anti-seep collars connected to the exterior of the pipe section or at a normal joint of the pipe material. The anti-seep collar material shall be compatible with the pipe material used and shall have a watertight bond to the exterior of the pipe section. The size and number of collars shall be selected by the designer in accordance with the following formula and table:

  Collar Outside Dimension = X + Diameter of pipe in feet

  Example: Pipe Length = 45 feet
  Barrel Pipe Diameter = 12 inches = 1 foot
  2 anti-seep collars

  Anti-seep Collar Dimensions:
  3.4 feet (from table) + 1.0 foot (Pipe dia.) = 4.4 feet
  Use 2 anti-seep collars each being 4.4 feet square or 4.4 feet diameter if round.

Table 3.4 Number and Spacing of Anti-Seep Collars

	X Values - Feet			
Pipe Length	*Number of Anti-Seep Collars*			
	1	**2**	**3**	**4**
40	6.0	3.0		
45	6.8	3.4		
50	7.5	3.8	2.5	
55		4.2	2.8	
60		4.5	3.0	
65		4.9	3.3	
70		5.3	3.5	2.6
75		5.6	3.8	2.8
80		6.0	4.0	3.0

- Risers used to discharge high flows shall be equipped with an anti-vortex device and trash rack.
- Spillways shall be constructed in undisturbed soil material (not fill) and shall not be placed on the embankment that forms the basin.

3.9.4 Design Guidance and Specifications

Design guidance for temporary sediment basins is in *Section 3.9.7 Design Procedures*. Criteria for sediment basins that will become permanent detention basins are in *Section 3.6.3 of the iSWM Criteria Manual*. Additional design guidance for different types of outlet structures is in *Section 2.2 of the Hydraulics Technical Manual*.

No specification for construction of this item is currently available in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments.

3.9.5 Inspection and Maintenance Requirements

Sediment basins should be inspected regularly (at least as often as required by the TPDES Construction General Permit) to check for damage and to insure that obstructions are not diminishing the effectiveness of the structure. Sediment shall be removed and the basin shall be re-graded to its original dimensions when the sediment storage capacity of the impoundment has been reduced by 20 percent. The removed sediment may be stockpiled or redistributed onsite in areas that are protected by erosion and sediment controls.

Inspect temporary stabilization of the embankment and graded basin and the velocity dissipaters at the outlet and spillway for signs of erosion. Repair any eroded areas that are found. Install additional erosion controls if erosion is frequently evident.

3.9.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. Dimensions of the sediment basin, embankment, and appurtenances shall be designed by an engineer licensed in the State of Texas. Construction drawings submitted to the municipality for review shall include, but are not limited to, the following information and supporting calculations.

- Embankment height, side slopes and top width.
- Dimensions of the skimmer, riser, weir or other primary outlet.
- Diameter of outfall pipe (barrel).
- Pool elevation for the temporary control design storm and conveyance storm.
- Outfall pipe flow rate and velocity for the temporary control design storm and conveyance storm.
- Spillway cross section, slope, flow rate, and velocity for the conveyance storm.
- Depth, width, length, and mean stone diameter for riprap apron or other velocity dissipation device at the outfall pipe and spillway discharge points.

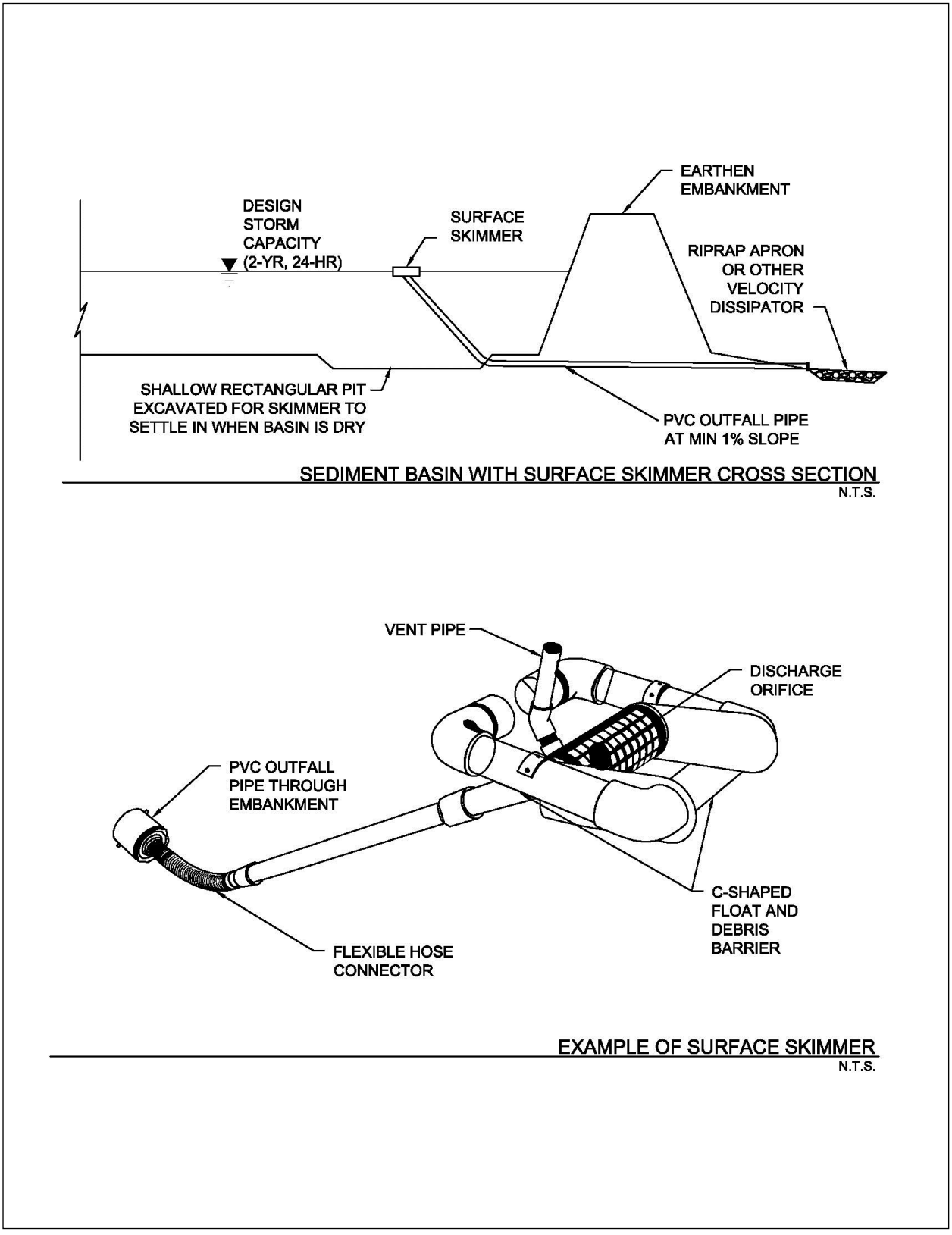


Figure 3.19 Schematics of Sediment Basin with Surface Skimmer
(Source: J.W. Faircloth & Son, Inc.)

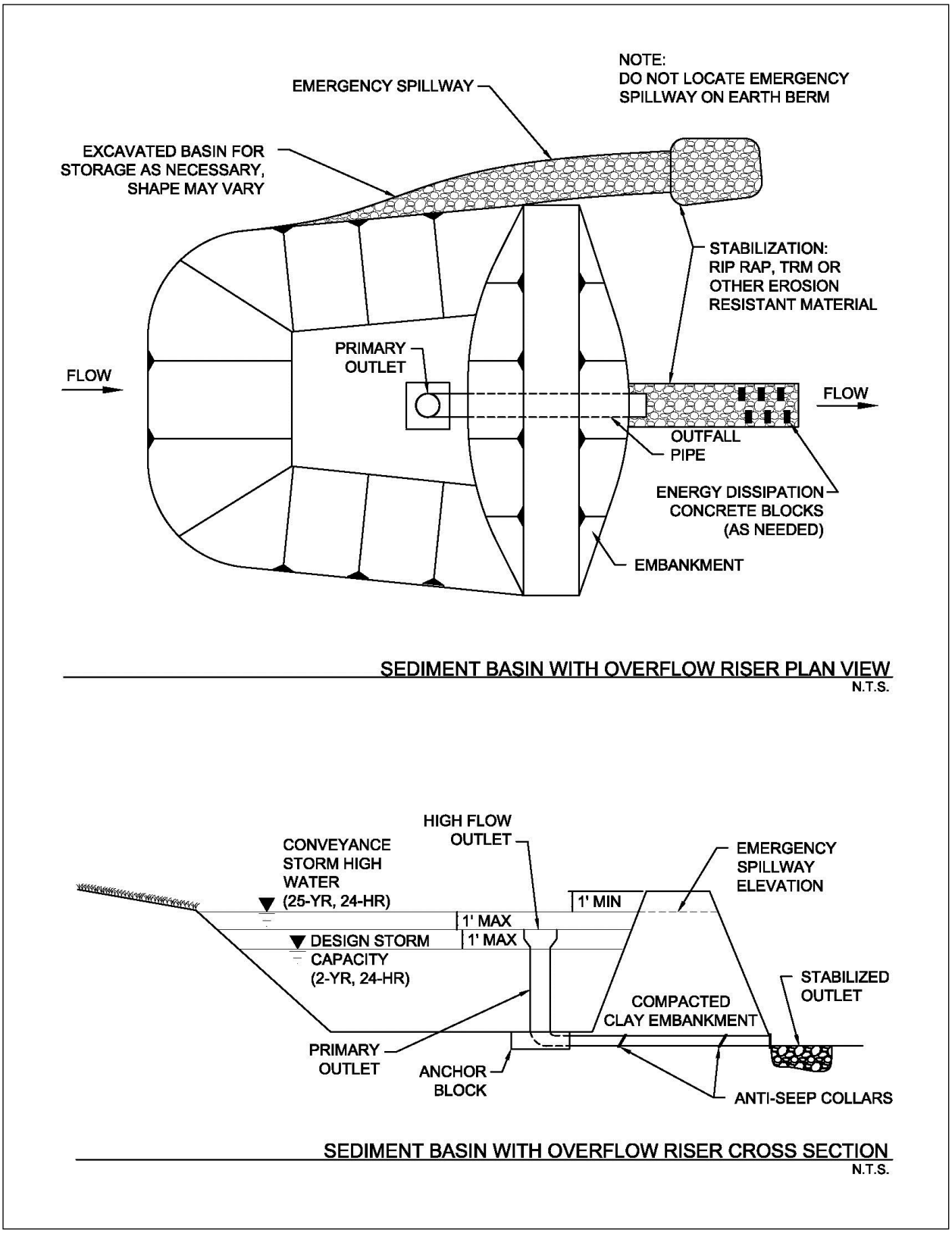
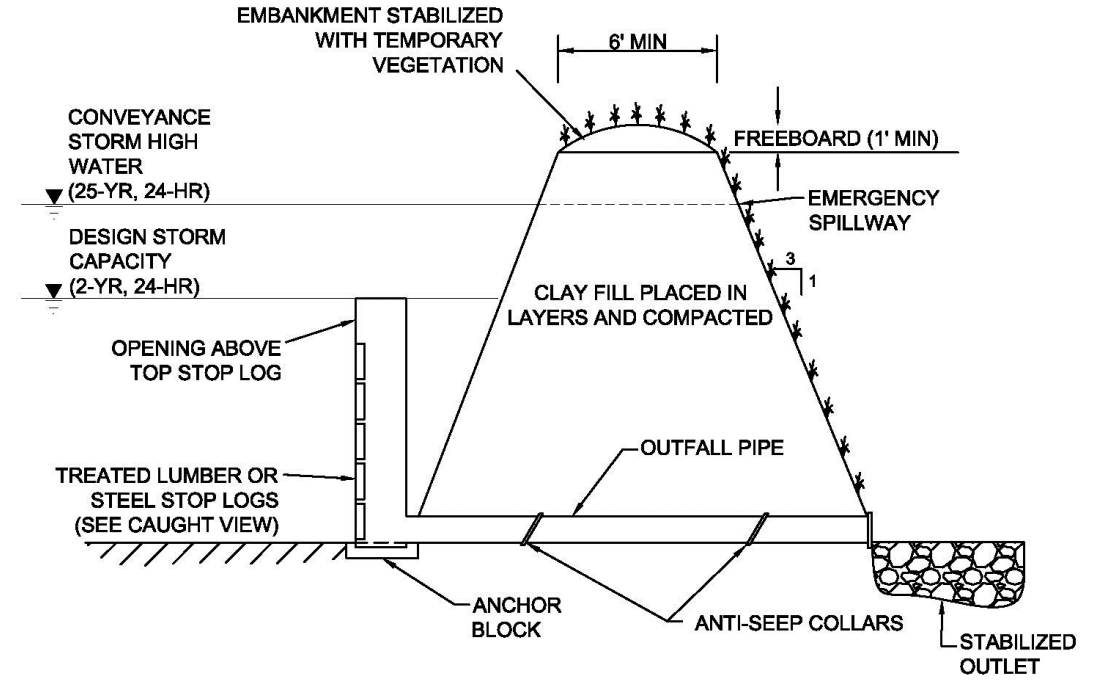
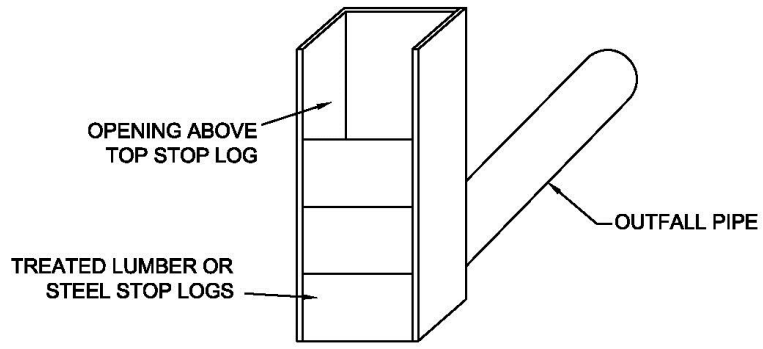


Figure 3.20 Schematics of Sediment Basin with Overflow Riser



EMBANKMENT CROSS SECTION WITH FLASHBOARD RISER
N.T.S.



FLASHBOARD RISER CONCEPT VIEW
N.T.S.

Figure 3.21 Schematics of Basin Embankment with Flashboard Riser

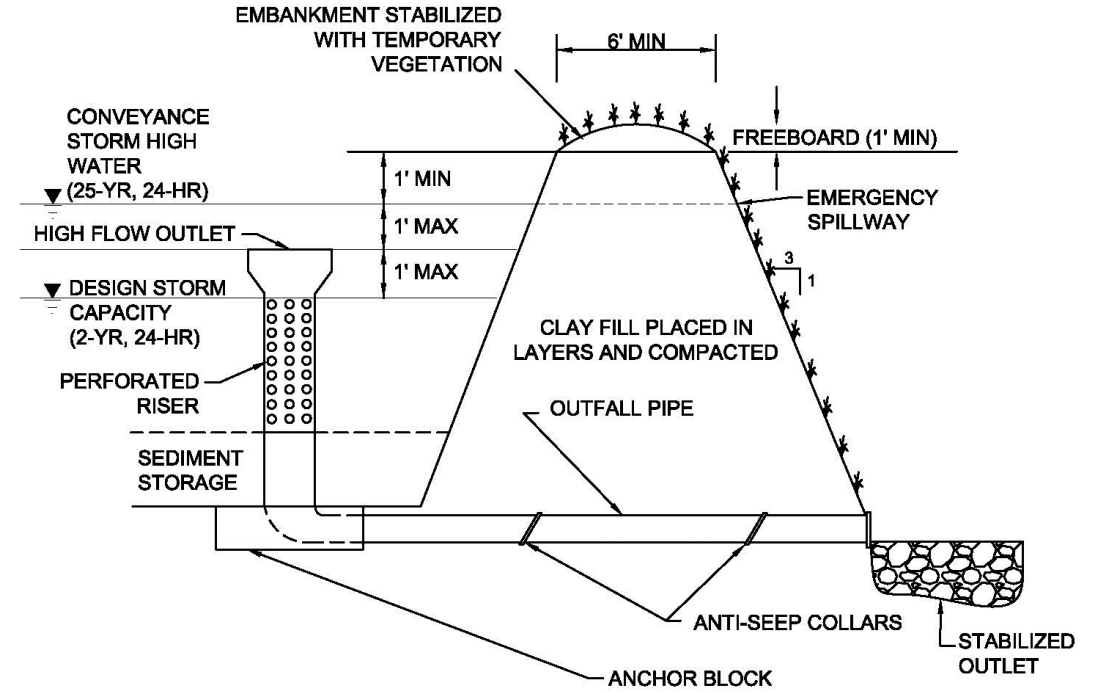


Figure 3.22 Schematic of Basin Embankment with Perforated Riser

3.9.7 Design Procedures

The following procedures provide a step-by-step method for the design of a temporary sediment basin that is smaller than the TCEQ thresholds for state requirements to apply. Criteria in *Section 3.8 of the iSWM Criteria Manual* should be used for the design of permanent basins (dry detention/extended dry detention) and stormwater ponds. *Section 3.9.8 Design Form* should be used to document the design values calculated for the temporary sediment basin.

These design procedures are provided as an example of the steps required to design a temporary sediment basin and are based on a specific type of primary outlet. When designing a sediment basin for a construction site, it's the engineer's responsibility to select the type of outlet that is appropriate based on criteria in the preceding sections and to modify the following procedures as needed to use appropriate calculations for the selected outlet, particularly in Steps 12, 13, and 14.

Step 1 Determine the required basin volume.

The basin volume shall be the calculated volume of runoff from the temporary control design storm (2-year, 24-hour) from each disturbed acre draining to the basin. When rainfall data is not available, a design volume of 3600 cubic feet of storage per acre drained may be used.

For a natural basin, the storage volume may be approximated as follows:

$$\mathbf{V_1 = 0.4 \times A_1 \times D_1} \qquad \mathbf{(3.2)}$$

where:

V_1 = the storage volume in cubic feet

A_1 = the surface area of the flooded area at the crest of the basin outlet, in square feet

D_1 = the maximum depth in feet, measured from the low point in the basin to the crest of the basin riser

Note 1: The volumes may be computed from more precise contour information or other suitable methods.

Note 2: Conversion between cubic feet and cubic yards is as follows:

Number of cubic feet x 0.037 = number of cubic yards

If the volume of the basin is inadequate or embankment height becomes excessive, pursue the use of excavation to obtain the required volume.

Step 2 Determine the basin shape.

The shape of the basin must be such that the length-to-width ratio is at least 4 to 1 according to the following equation:

$$\mathbf{\text{Length-to-width Ratio} = \frac{L}{We}} \qquad \mathbf{(3.3)}$$

where:

We = A/L = the effective width

A = the surface area of the normal pool

L = the length of the flow path from the inflow to the outflow. If there is more than one inflow point, any inflow that carries more than 30 percent of the peak rate of inflow must meet these criteria.

The correct basin length can be obtained by proper site selection, excavation, or the use of baffles. Baffles increase the flow length by interrupting flow and directing it through the basin in a circuitous path to prevent short-circuiting. Porous baffles are recommended. Spacing of baffles should be wide enough to not cause a channeling effect within the basin. Analyze the

flow cross section and velocity between baffles to ensure that velocities are not too fast for settling to occur.

Step 3 Design the embankment.

The side slopes of the embankment should be 3:1 or flatter.

Top width shall be determined by the engineer based on the total height of the embankment.

The area under the embankment should be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable materials. The pool area should also be cleared of all brush and trees.

The embankment fill material should be clay soil from an approved borrow area. It should be clean soil, free from roots, woody vegetation, oversized stones, and rocks.

Step 4 Select the type(s) of outlet(s).

The outlets for the basin may consist of a combination of a primary outlet and emergency spillway or a primary outlet alone. In either case, the outlet(s) must pass the peak runoff expected from the drainage area for the conveyance storm (25-year, 24-hour) without damage to the embankment, structures, or basin.

Step 5 Determine whether the basin will have a separate emergency spillway.

A side channel emergency spillway is required for sediment basins receiving stormwater from more than 10 acres.

Step 6 Determine the elevation of the crest of the basin outlet riser for the required volume.

Step 7 Estimate the elevation of the conveyance storm and the required height of the dam.

(a) If an emergency spillway is included, the crest of the basin outlet riser must be at least 1.0 foot below the crest of the emergency spillway.

(b) If an emergency spillway is included, the elevation of the peak flow through the emergency spillway (which will be the design high water for the conveyance storm) must be at least 1.0 foot below the top of embankment.

(c) If an emergency spillway is not included, the crest of the basin outlet riser must be at least 3 feet below the top of the embankment.

(d) If an emergency spillway is not included, the elevation of the design high water for the conveyance storm must be 2.0 feet below the top of the embankment.

Step 8 Determine the peak rate of runoff for a 25-year storm.

Using SCS TR 55 Urban Hydrology for Small Watersheds or other methods, determine the peak rate of runoff expected from the drainage area of the basin for the conveyance storm. The "C" factor or "CN" value used in the runoff calculation should be derived from analysis of the contributing drainage area at the peak of land disturbance (condition which will create greatest peak runoff).

Step 9 Design the basin outlet.

(a) If an emergency spillway is included, the basin outfall must at least pass the peak rate of runoff from the basin drainage area for the temporary control design storm (2-year, 24-hour).

Q_p = the 2-year peak rate of runoff.

(b) If an emergency spillway is not included, the basin outfall must pass the peak rate of runoff from the basin drainage area for the conveyance storm (25-year, 24-hour).

Q_{25} = the 25-year peak rate of runoff.

(c) Refer to Figure 3.23, where h is the difference between the elevation of the crest of the basin outlet riser and the elevation of the crest of the emergency spillway.

(d) Enter Figure 3.24 with Q_p. Choose the smallest riser which will pass the required flow with the available head, h.

(e) Refer to Figure 3.23, where H is the difference in elevation of the centerline of the outlet of the outfall and the crest of the emergency spillway. L is the length of the barrel through the embankment.

(f) Enter Table 3.5 or Table 3.6 with H. Choose the smallest size outlet that will pass the flow provided by the riser. If L is other than 70 feet, make the necessary correction.

(g) The basin riser shall consist of a solid (non-perforated), vertical pipe or box of corrugated metal joined by a watertight connection to a horizontal pipe (outfall) extending through the embankment and discharging beyond the downstream toe of the fill. Another approach is to utilize a perforated vertical riser section surrounded by filter stone.

(h) The basin outfall, which extends through the embankment, shall be designed to carry the flow provided by the riser with the water level at the crest of the emergency spillway. The connection between the riser and the outfall must be watertight. The outlet of the outfall must be protected to prevent erosion or scour of downstream areas.

(i) Weirs, skimmers and other types of outlets may be used if accompanied with appropriate calculations.

Step 10 Design the emergency spillway.

(a) The emergency spillway must pass the remainder of the 25-year peak rate of runoff not carried by the basin outlet.

(b) Compute: $Q_e = Q_{25} - Q_p$

(c) Refer to Figure 3.25 and Table 3.7.

(d) Determine approximate permissible values for b, the bottom width; s, the slope of the exit channel; and X, minimum length of the exit channel.

(e) Enter Table 3.7 and choose the exit channel cross-section which passes the required flow and meets the other constraints of the site.

(f) Notes:

1. The maximum permissible velocity for vegetated waterways must be considered when designing an exit channel.
2. For a given Hp, a decrease in the exit slope from S as given in the table decreases spillway discharge, but increasing the exit slope from S does not increase discharge. If an exit slope (Se) steeper than S is used, then the exit should be considered an open channel and analyzed using the Manning's Equation.
3. Data to the right of heavy vertical lines should be used with caution, as the resulting sections will be either poorly proportioned or have excessive velocities.

(g) The emergency spillway should not be constructed over fill material.

(h) The emergency spillway should be stabilized with rock riprap or temporary vegetation upon completion of the basin.

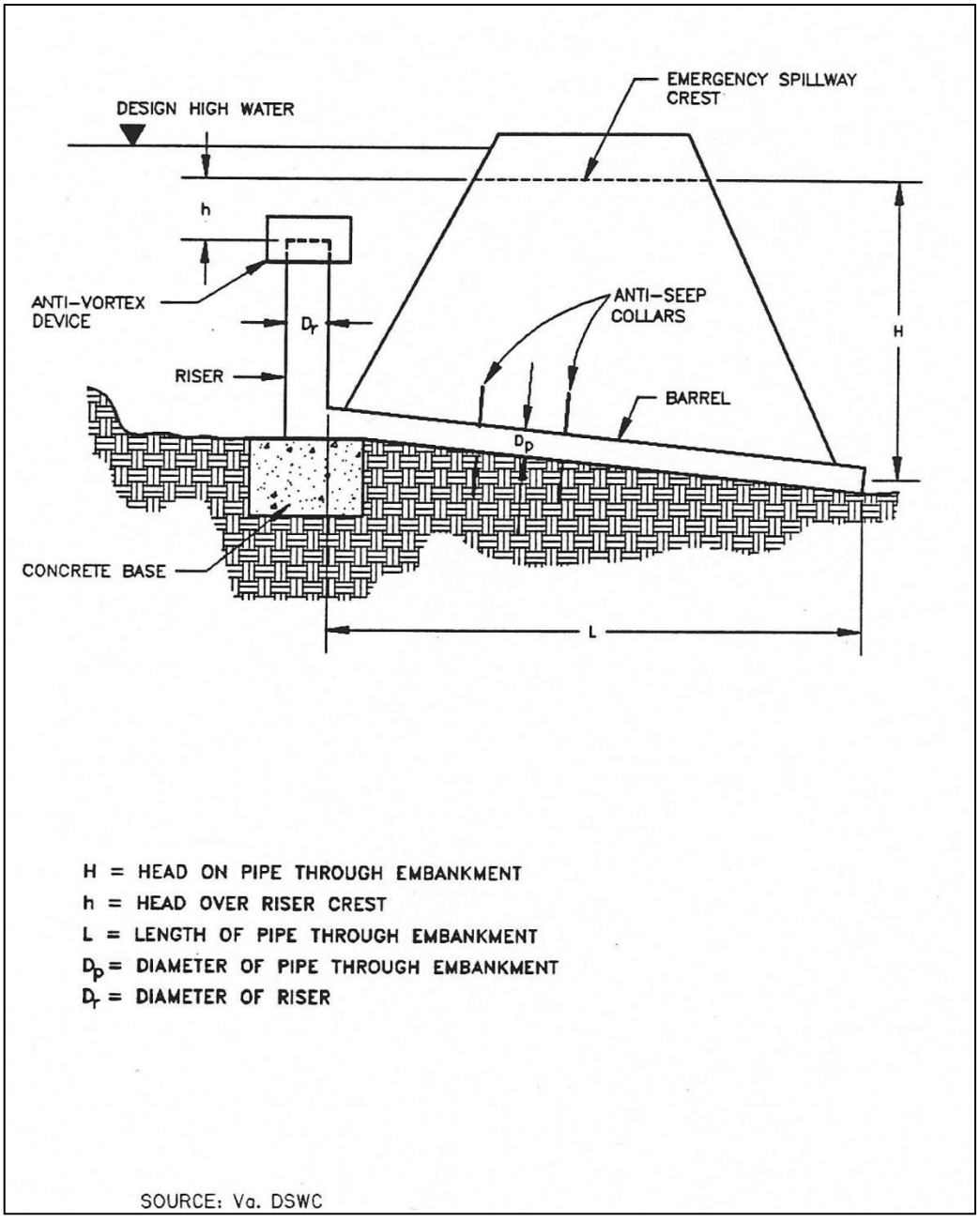


Figure 3.23 Example of Basin Outlet Design

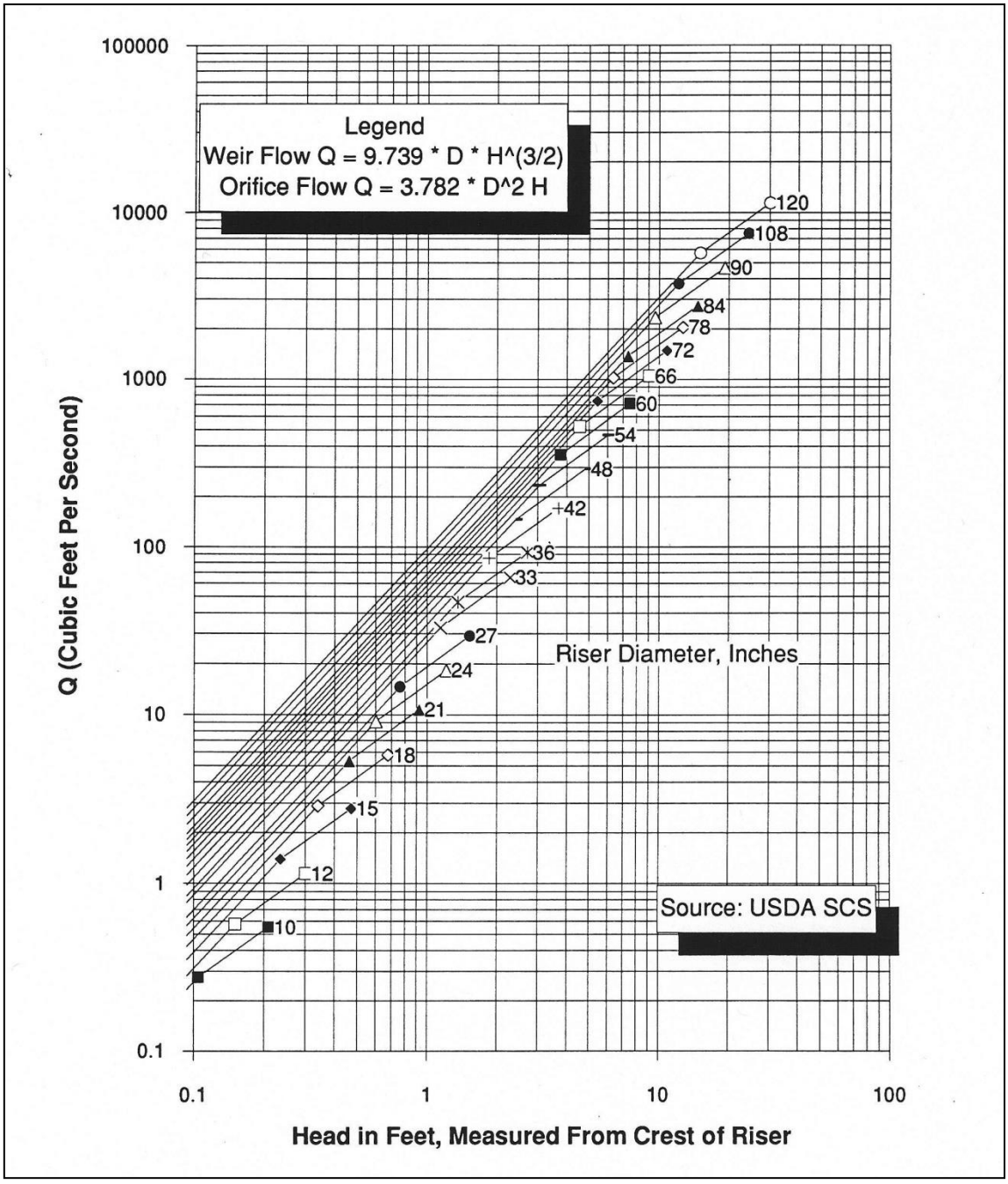
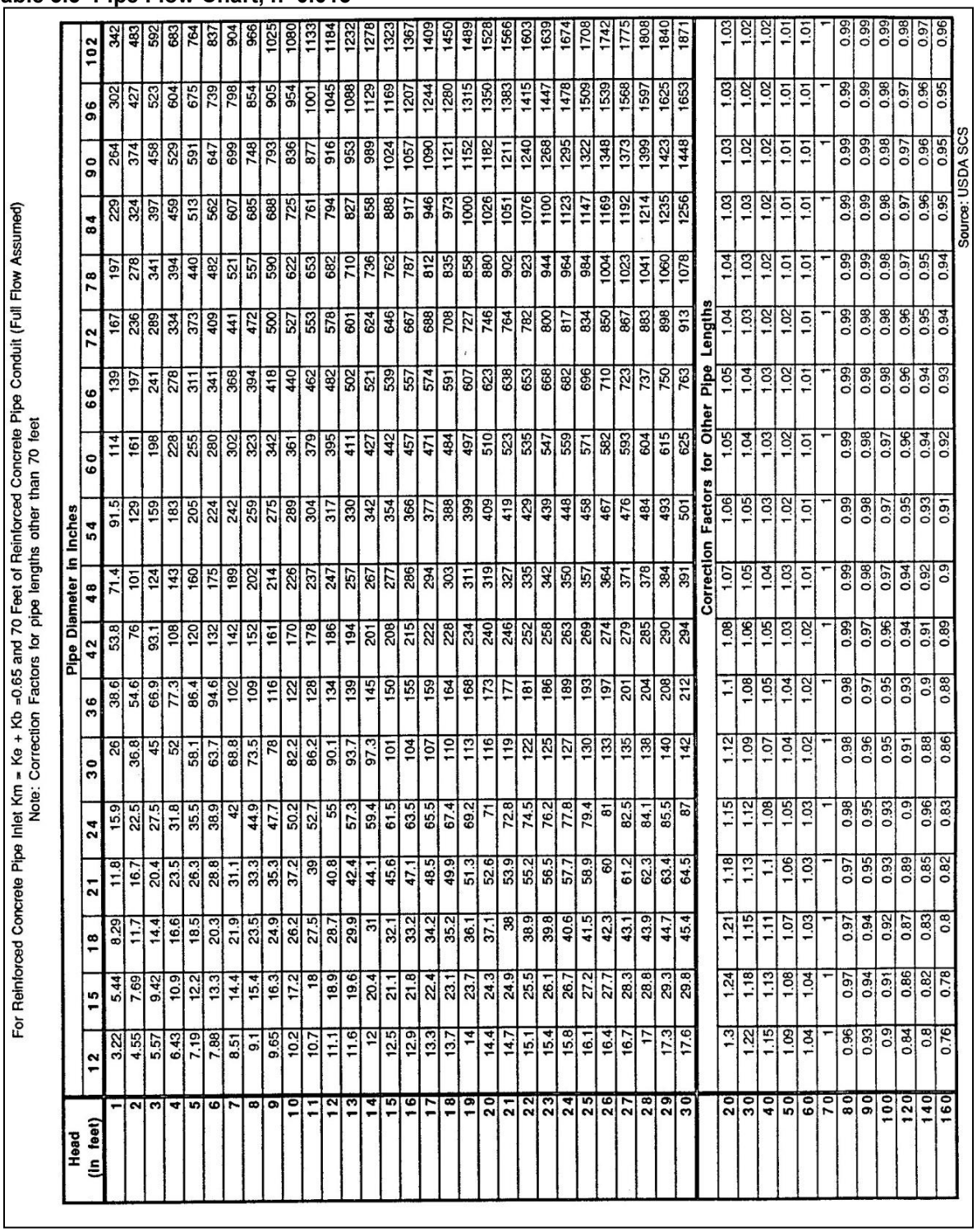


Figure 3.24 Riser Inflow Curves for Basin Outlet Design

Table 3.5 Pipe Flow Chart, n=0.013

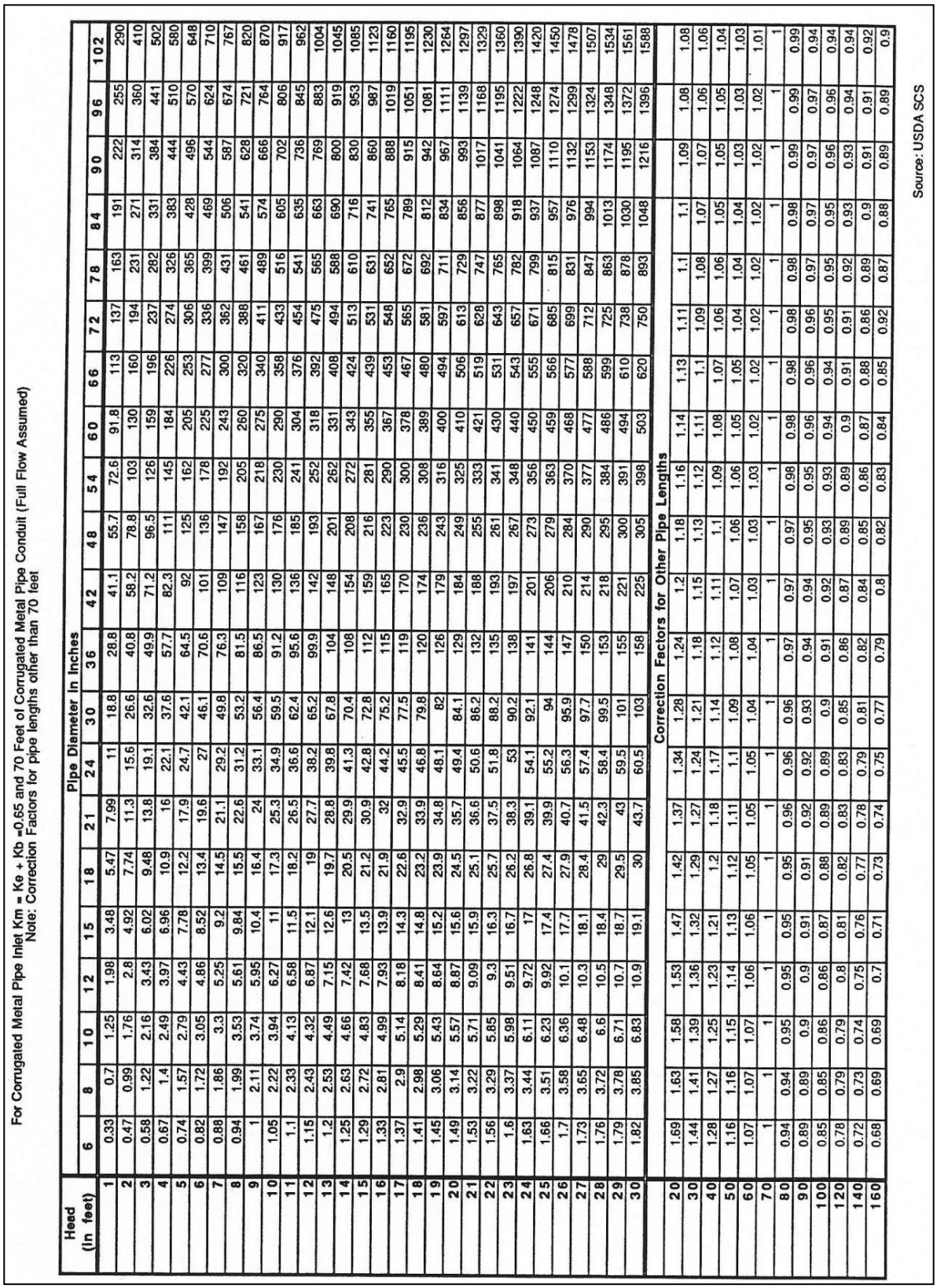


For Reinforced Concrete Pipe Inlet Km = Ke + Kb =0.65 and 70 Feet of Reinforced Concrete Pipe Conduit (Full Flow Assumed)
Note: Correction Factors for pipe lengths other than 70 feet

Head (in feet)	Pipe Diameter in Inches																	
	12	15	18	21	24	30	36	42	48	54	60	66	72	78	84	90	96	102
1	3.22	5.44	8.29	11.8	15.9	26	38.6	53.8	71.4	91.5	114	139	167	197	229	264	302	342
2	4.55	7.69	11.7	16.7	22.5	36.8	54.6	76	101	129	161	197	236	278	324	374	427	483
3	5.57	9.42	14.4	20.4	27.5	45	66.9	93.1	124	159	198	241	289	341	397	458	523	592
4	6.43	10.9	16.6	23.5	31.8	52	77.3	108	143	183	228	278	334	394	459	529	604	683
5	7.19	12.2	18.5	26.3	35.5	58.1	86.4	120	160	205	255	311	373	440	513	591	675	764
6	7.88	13.3	20.3	28.8	38.9	63.7	94.6	132	175	224	280	341	409	482	562	647	739	837
7	8.51	14.4	21.9	31.1	42	68.8	102	142	189	242	302	368	441	521	607	699	798	904
8	9.1	15.4	23.5	33.3	44.9	73.5	109	152	202	259	323	394	472	557	685	748	854	966
9	9.65	16.3	24.9	35.3	47.7	78	116	161	214	275	342	418	500	590	688	793	905	1025
10	10.2	17.2	26.2	37.2	50.2	82.2	122	170	226	289	361	440	527	622	725	836	954	1080
11	10.7	18	27.5	39	52.7	86.2	128	178	237	304	379	462	553	653	761	877	1001	1133
12	11.1	18.9	28.7	40.8	55	90.1	134	186	247	317	395	482	578	682	794	916	1045	1184
13	11.6	19.6	29.9	42.4	57.3	93.7	139	194	257	330	411	502	601	710	827	953	1088	1232
14	12	20.4	31	44.1	59.4	97.3	145	201	267	342	427	521	624	736	858	989	1129	1278
15	12.5	21.1	32.1	45.6	61.5	101	150	208	277	354	442	539	646	762	888	1024	1169	1323
16	12.9	21.8	33.2	47.1	63.5	104	155	215	286	366	457	557	667	787	917	1057	1207	1367
17	13.3	22.4	34.2	48.5	65.5	107	159	222	294	377	471	574	688	812	946	1090	1244	1409
18	13.7	23.1	35.2	49.9	67.4	110	164	228	303	388	484	591	708	835	973	1121	1280	1450
19	14	23.7	36.1	51.3	69.2	113	168	234	311	399	497	607	727	858	1000	1152	1315	1489
20	14.4	24.3	37.1	52.6	71	116	173	240	319	409	510	623	746	880	1026	1182	1350	1528
21	14.7	24.9	38	53.9	72.8	119	177	246	327	419	523	638	764	902	1051	1211	1383	1566
22	15.1	25.5	38.9	55.2	74.5	122	181	252	335	429	535	653	782	923	1076	1240	1415	1603
23	15.4	26.1	39.8	56.5	76.2	125	186	258	342	439	547	668	800	944	1100	1268	1447	1639
24	15.8	26.7	40.6	57.7	77.8	127	189	263	350	448	559	682	817	964	1123	1295	1478	1674
25	16.1	27.2	41.5	58.9	79.4	130	193	269	357	458	571	696	834	984	1147	1322	1509	1708
26	16.4	27.7	42.3	60	81	133	197	274	364	467	582	710	850	1004	1169	1348	1539	1742
27	16.7	28.3	43.1	61.2	82.5	135	201	279	371	476	593	723	867	1023	1192	1373	1568	1775
28	17	28.8	43.9	62.3	84.1	138	204	285	378	484	604	737	883	1041	1214	1399	1597	1808
29	17.3	29.3	44.7	63.4	85.5	140	208	290	384	493	615	750	898	1060	1235	1423	1625	1840
30	17.6	29.8	45.4	64.5	87	142	212	294	391	501	625	763	913	1078	1256	1448	1653	1871
Correction Factors for Other Pipe Lengths																		
20	1.3	1.24	1.21	1.18	1.15	1.12	1.1	1.08	1.07	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.03
30	1.22	1.18	1.15	1.13	1.12	1.09	1.08	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02
40	1.15	1.13	1.11	1.1	1.08	1.07	1.05	1.05	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02
50	1.09	1.08	1.07	1.06	1.05	1.04	1.04	1.03	1.03	1.02	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01
60	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
70	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80	0.96	0.97	0.97	0.97	0.98	0.98	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
90	0.93	0.94	0.94	0.95	0.95	0.96	0.97	0.97	0.98	0.98	0.98	0.98	0.98	0.99	0.99	0.99	0.99	0.99
100	0.9	0.91	0.92	0.93	0.93	0.95	0.95	0.96	0.97	0.97	0.97	0.98	0.98	0.98	0.98	0.98	0.98	0.99
120	0.84	0.86	0.87	0.89	0.9	0.91	0.93	0.94	0.94	0.95	0.96	0.96	0.96	0.97	0.97	0.97	0.97	0.98
140	0.8	0.82	0.83	0.85	0.96	0.88	0.9	0.91	0.92	0.93	0.94	0.94	0.95	0.95	0.96	0.96	0.96	0.97
160	0.76	0.78	0.8	0.82	0.83	0.86	0.88	0.89	0.9	0.91	0.92	0.93	0.94	0.94	0.95	0.95	0.95	0.96

Source: USDA SCS

Table 3.6 Pipe Flow Chart, n=0.025



For Corrugated Metal Pipe Inlet Km = Ke + Kb =0.65 and 70 Feet of Corrugated Metal Pipe Conduit (Full Flow Assumed)
Note: Correction Factors for pipe lengths other than 70 feet

Head (In feet)	Pipe Diameter In Inches																							
	6	8	10	12	15	18	21	24	30	36	42	48	54	60	66	72	78	84	90	96	102			
1	0.33	0.7	1.25	1.98	3.48	5.47	7.99	11	18.8	28.8	41.1	55.7	72.6	91.8	113	137	163	191	222	255	290			
2	0.47	0.99	1.76	2.8	4.92	7.74	11.3	15.6	26.6	40.8	58.2	78.8	103	130	160	194	231	271	314	360	410			
3	0.58	1.22	2.16	3.43	6.02	9.48	13.8	19.1	32.6	49.9	71.2	96.5	126	159	196	237	282	331	384	441	502			
4	0.67	1.4	2.49	3.97	6.96	10.9	16	22.1	37.6	57.7	82.3	111	145	184	226	274	326	383	444	510	580			
5	0.74	1.57	2.79	4.43	7.78	12.2	17.9	24.7	42.1	64.5	92	125	162	205	253	306	365	428	496	570	648			
6	0.82	1.72	3.05	4.86	8.52	13.4	19.6	27	46.1	70.6	101	136	178	225	277	336	399	469	544	624	710			
7	0.88	1.86	3.3	5.25	9.2	14.5	21.1	29.2	49.8	76.3	109	147	192	243	300	362	431	506	587	674	767			
8	0.94	1.99	3.53	5.61	9.84	15.5	22.6	31.2	53.2	81.5	116	158	205	260	320	388	461	541	628	721	820			
9	1	2.11	3.74	5.95	10.4	16.4	24	33.1	56.4	86.5	123	167	218	275	340	411	489	574	666	764	870			
10	1.05	2.22	3.94	6.27	11	17.3	25.3	34.9	59.5	91.2	130	176	230	290	358	433	516	605	702	806	917			
11	1.1	2.33	4.13	6.58	11.5	18.2	26.5	36.6	62.4	95.6	136	185	241	304	376	454	541	635	736	845	962			
12	1.15	2.43	4.32	6.87	12.1	19	27.7	38.2	65.2	99.9	142	193	252	318	392	475	565	663	769	883	1004			
13	1.2	2.53	4.49	7.15	12.6	19.7	28.8	39.8	67.8	104	148	201	262	331	408	494	588	690	800	919	1045			
14	1.25	2.63	4.66	7.42	13	20.5	29.9	41.3	70.4	108	154	208	272	343	424	513	610	716	830	953	1085			
15	1.29	2.72	4.83	7.68	13.5	21.2	30.9	42.8	72.8	112	159	216	281	355	439	531	631	741	860	987	1123			
16	1.33	2.81	4.99	7.93	13.9	21.9	32	44.2	75.2	115	165	223	290	367	453	548	652	765	888	1019	1160			
17	1.37	2.9	5.14	8.18	14.3	22.6	32.9	45.5	77.5	119	170	230	300	378	467	565	672	789	915	1051	1195			
18	1.41	2.98	5.29	8.41	14.8	23.2	33.9	46.8	79.8	120	174	236	308	389	480	581	692	812	942	1081	1230			
19	1.45	3.06	5.43	8.64	15.2	23.9	34.8	48.1	82	126	179	243	316	400	494	597	711	834	967	1111	1264			
20	1.49	3.14	5.57	8.87	15.6	24.5	35.7	49.4	84.1	129	184	249	325	410	506	613	729	856	993	1139	1297			
21	1.53	3.22	5.71	9.09	15.9	25.1	36.6	50.6	86.2	132	188	255	333	421	519	628	747	877	1017	1168	1329			
22	1.56	3.29	5.85	9.3	16.3	25.7	37.5	51.8	88.2	135	193	261	341	430	531	643	765	898	1041	1195	1360			
23	1.6	3.37	5.98	9.51	16.7	26.2	38.3	53	90.2	138	197	267	348	440	543	657	782	918	1064	1222	1390			
24	1.63	3.44	6.11	9.72	17	26.8	39.1	54.1	92.1	141	201	273	356	450	555	671	799	937	1087	1248	1420			
25	1.66	3.51	6.23	9.92	17.4	27.4	39.9	55.2	94	144	206	279	363	459	566	685	815	957	1110	1274	1450			
26	1.7	3.58	6.36	10.1	17.7	27.9	40.7	56.3	95.9	147	210	284	370	468	577	699	831	976	1132	1299	1478			
27	1.73	3.65	6.48	10.3	18.1	28.4	41.5	57.4	97.7	150	214	290	377	477	588	712	847	994	1153	1324	1507			
28	1.76	3.72	6.6	10.5	18.4	29	42.3	58.4	99.5	153	218	295	384	486	599	725	863	1013	1174	1348	1534			
29	1.79	3.78	6.71	10.7	18.7	29.5	43	59.5	101	155	221	300	391	494	610	738	878	1030	1195	1372	1561			
30	1.82	3.85	6.83	10.9	19.1	30	43.7	60.5	103	158	225	305	398	503	620	750	893	1048	1216	1396	1588			
Correction Factors for Other Pipe Lengths																								
20	1.69	1.63	1.58	1.53	1.47	1.42	1.37	1.34	1.28	1.24	1.2	1.18	1.16	1.14	1.13	1.11	1.1	1.1	1.09	1.08	1.08			
30	1.44	1.41	1.39	1.36	1.32	1.29	1.27	1.24	1.21	1.18	1.15	1.13	1.12	1.11	1.1	1.09	1.08	1.07	1.07	1.06	1.06			
40	1.28	1.27	1.25	1.23	1.21	1.2	1.18	1.17	1.14	1.12	1.11	1.1	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.05	1.04			
50	1.16	1.16	1.15	1.14	1.13	1.12	1.11	1.1	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.04	1.04	1.04	1.03	1.03	1.03			
60	1.07	1.07	1.07	1.06	1.06	1.05	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.01			
70	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
80	0.94	0.94	0.95	0.95	0.95	0.95	0.96	0.96	0.96	0.97	0.97	0.97	0.98	0.98	0.98	0.98	0.98	0.98	0.99	0.99	0.99			
90	0.89	0.89	0.9	0.9	0.91	0.91	0.92	0.92	0.93	0.94	0.94	0.95	0.95	0.96	0.96	0.96	0.97	0.97	0.97	0.97	0.94			
100	0.85	0.85	0.86	0.86	0.86	0.87	0.88	0.89	0.89	0.9	0.91	0.92	0.93	0.93	0.94	0.94	0.95	0.95	0.95	0.96	0.96	0.94		
120	0.78	0.79	0.79	0.8	0.81	0.82	0.83	0.83	0.85	0.86	0.87	0.89	0.89	0.9	0.91	0.91	0.92	0.92	0.93	0.93	0.94	0.94		
140	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79	0.81	0.82	0.84	0.85	0.86	0.87	0.88	0.86	0.89	0.9	0.91	0.91	0.92			
160	0.68	0.69	0.69	0.7	0.71	0.73	0.74	0.75	0.77	0.79	0.8	0.82	0.83	0.84	0.85	0.92	0.87	0.88	0.89	0.89	0.9			

Source: USDA SCS

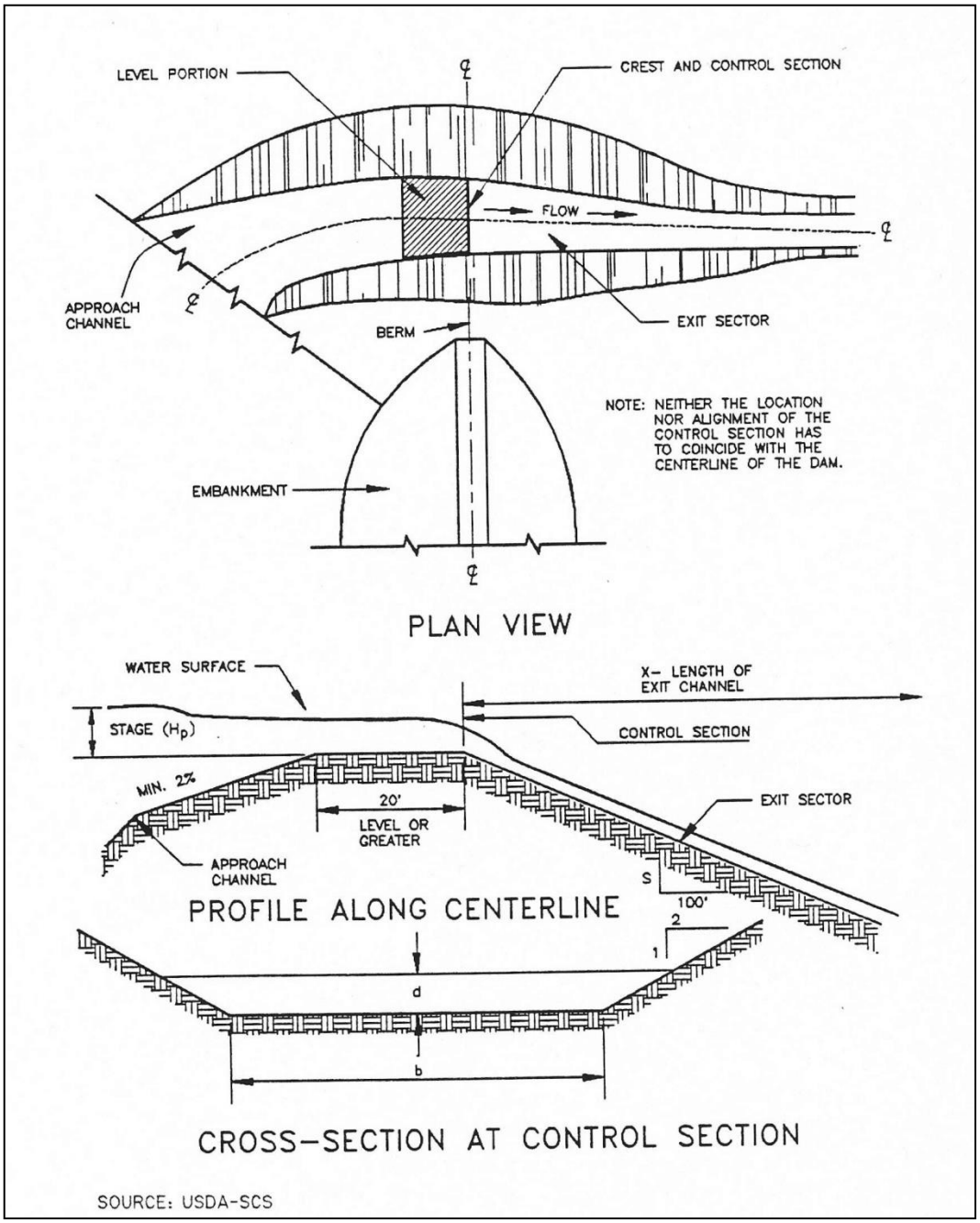


Figure 3.25 Example of Excavated Earth Spillway Design

Table 3.7 Design Data for Earth Spillways

Stage (Hp) In Feet	Spillway Variables	Bottom Width (b) In Feet																
		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
0.5	Q	6	7	8	10	11	13	14	15	17	18	20	21	22	24	25	27	28
	V	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	S	3.9	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	X	32	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
0.6	Q	8	10	12	14	16	18	20	22	24	26	28	30	32	34	35	37	39
	V	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	S	3.7	3.7	3.7	3.7	3.6	3.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
	X	36	36	36	36	36	36	37	37	37	37	37	37	37	37	37	37	37
0.7	Q	11	13	16	18	20	23	25	28	30	33	35	38	41	43	44	46	48
	V	3.2	3.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
	S	3.5	3.5	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
	X	39	40	40	40	41	41	41	41	41	41	41	41	41	41	41	41	41
0.8	Q	13	16	19	22	26	29	32	35	38	42	45	46	48	51	54	57	60
	V	3.5	3.5	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
	S	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	X	44	44	44	44	44	45	45	45	45	45	45	45	45	45	45	45	45
0.9	Q	17	20	24	28	32	35	39	43	47	51	53	57	60	64	68	71	75
	V	3.7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	S	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	X	47	47	48	48	48	48	48	48	48	48	49	49	49	49	49	49	49
1	Q	20	24	29	33	38	42	47	51	56	61	63	68	72	77	81	86	90
	V	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	S	3.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	X	51	51	51	51	52	52	52	52	52	52	52	52	52	52	52	52	52
1.1	Q	23	28	34	39	44	49	54	60	65	70	74	79	84	89	95	100	105
	V	4.2	4.2	4.2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
	S	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	X	55	55	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56
1.2	Q	28	33	40	45	51	58	64	69	76	80	86	92	98	104	110	116	122
	V	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
	S	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	X	58	58	59	59	59	59	59	59	60	60	60	60	60	60	60	60	60
1.3	Q	32	38	46	53	58	65	73	80	86	91	99	106	112	119	125	133	140
	V	4.5	4.6	4.6	4.6	4.6	4.6	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
	S	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	X	62	62	62	63	63	63	63	63	63	63	63	64	64	64	64	64	64
1.4	Q	37	44	51	59	66	74	82	90	96	103	111	119	127	134	143	150	158
	V	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
	S	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
	X	65	66	66	66	66	67	67	67	67	67	67	68	68	68	68	68	69

Table 3.7 Design Data for Earth Spillways (continued)

Stage (Hp) In Feet	Spillway Variables	Bottom Width (b) In Feet																
		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
1.5	Q	41	50	58	66	75	85	92	101	108	116	125	133	142	150	160	169	178
	V	4.8	4.9	5	5	5	5	5	5	5	5	5	5	5	5	5.1	5.1	5.1
	S	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5
	X	69	69	70	70	71	71	71	71	71	71	71	72	72	72	72	72	72
1.6	Q	46	56	65	75	84	94	104	112	122	132	142	149	158	168	178	187	197
	V	5	5.1	5.1	5.1	5.1	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
	S	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	X	72	74	74	75	75	76	76	76	76	76	76	76	76	76	76	76	76
1.7	Q	52	62	72	83	94	105	115	126	135	145	156	167	175	187	196	206	217
	V	5.2	5.2	5.2	5.3	5.3	5.3	5.3	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	S	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	X	76	78	79	80	80	80	80	80	80	80	80	80	80	80	80	80	80
1.8	Q	58	69	81	93	104	116	127	138	150	160	171	182	194	204	214	226	233
	V	5.3	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.6	5.6	5.6	5.6	5.6	5.6
	S	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
	X	80	82	83	84	84	84	84	84	84	84	84	84	84	84	84	84	84
1.9	Q	64	76	88	102	114	127	140	152	164	175	188	201	213	225	235	248	260
	V	5.5	5.5	5.5	5.6	5.6	5.6	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	S	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
	X	84	85	86	87	88	88	88	88	88	88	88	88	88	88	88	88	88
2	Q	71	83	97	111	125	138	153	164	178	193	204	218	232	245	256	269	283
	V	5.6	5.7	5.7	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.9	5.9	5.9	5.9	5.9	5.9
	S	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	X	88	90	91	91	91	91	92	92	92	92	92	92	92	92	92	92	92
2.1	Q	77	91	107	122	135	149	162	177	192	207	220	234	250	267	276	291	305
	V	5.7	5.8	5.9	5.9	5.9	5.9	5.9	6	6	6	6	6	6	6	6	6	6
	S	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	X	92	93	95	95	95	95	95	95	95	96	96	96	96	96	96	96	96
2.2	Q	84	100	116	131	146	163	177	194	210	224	238	253	269	288	301	314	330
	V	5.9	5.9	6	6	6	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.2	6.2	6.2	6.2
	S	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	X	96	98	99	99	99	99	99	100	100	100	100	100	100	100	100	100	100
2.3	Q	90	108	124	140	158	175	193	208	226	243	258	275	292	306	323	341	354
	V	6	6.1	6.1	6.1	6.2	6.2	6.2	6.2	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
	S	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	X	100	102	102	103	103	103	104	104	104	105	105	105	105	105	105	105	105
2.4	Q	99	116	136	152	170	189	206	224	241	260	275	294	312	327	346	364	378
	V	6.1	6.2	6.2	6.3	6.3	6.3	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
	S	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	X	105	105	106	107	107	108	108	108	108	109	109	109	109	109	109	109	109

Source: USDA - SCS

Step 11 Re-estimate the elevation of the design high water and the top of the dam based upon the design of the basin outlet and the emergency spillway.

Step 12 Design the anti-vortex device and trash rack.

If an outfall riser is used, an anti-vortex device and trash rack shall be attached to the top of the basin riser to improve the flow of water into the outfall and prevent floating debris from being carried out of the basin.

This design procedure for the anti-vortex device and trash rack refers only to round riser pipes of corrugated metal. There are numerous ways to provide protection for concrete pipe; these include various hoods and grates and rebar configurations which should be a part of project-specific design and will frequently be a part of a permanent structure.

Refer to Figure 3.26 and Table 3.8. Choose cylinder size, support bars, and top requirements from Table 3.8 based on the diameter of the riser pipe.

Step 13 Design the anchoring for the basin outlet.

The basin outlet must be firmly anchored to prevent its floating.

If the riser is over 10 feet high, the forces acting on the spillway must be calculated. A method of anchoring the spillway which provides a safety factor of 1.25 must be used (downward forces = 1.25 x upward forces).

If the riser is 10 feet or less in height, choose one of the two methods in Figure 3.27 to anchor the basin outlet.

Determine the number and spacing of anti-seep collars for the outfall pipe through the embankment.

Step 14 Provide for dewatering.

(a) Use a modified version of the discharge equation for a vertical orifice and a basic equation for the area of a circular orifice.

Naming the variables:

- A = flow area of orifice, in square feet
- D = diameter of circular orifice, in inches
- h = average driving head (maximum possible head measured from radius of orifice to crest of basin outlet divided by 2), in feet
- Q = volumetric flow rate through orifice needed to achieve approximate 6-hour drawdown, cubic feet per second
- S = total storage available in dry storage area, cubic feet
- Q = S/21,600 seconds

(b) An alternative approach for dewatering is the use of a perforated riser (0.75" to 1" diameter holes spaced every 12 inch horizontally and 8 inch vertically) with 1½ inch to 2 inch filter stone stacked around the exterior.

Use S for basin and find Q. Then substitute in calculated Q and find A:

$$A = \frac{Q}{(0.6) \times (64.32 \times \frac{h}{2})} \qquad (3.4)$$

Then, substitute in calculated A and find d:

$$d^* = 2 \times \frac{(A)}{(3.14)} \qquad (3.5)$$

Diameter of the dewatering orifice should never be less than 3 inches in order to help prevent clogging by soil or debris.

Flexible tubing should be at least 2 inches larger in diameter than the calculated orifice to promote improved flow characteristics.

Additional design guidance for orifices and perforated risers are in *Section 2.2.2 of the Hydraulics Technical Manual*.

(c) If a surface skimmer is used as the basin's primary outlet, it may also be used to dewater the basin. Orifice flowrates for the skimmer will be provided by the manufacturer.

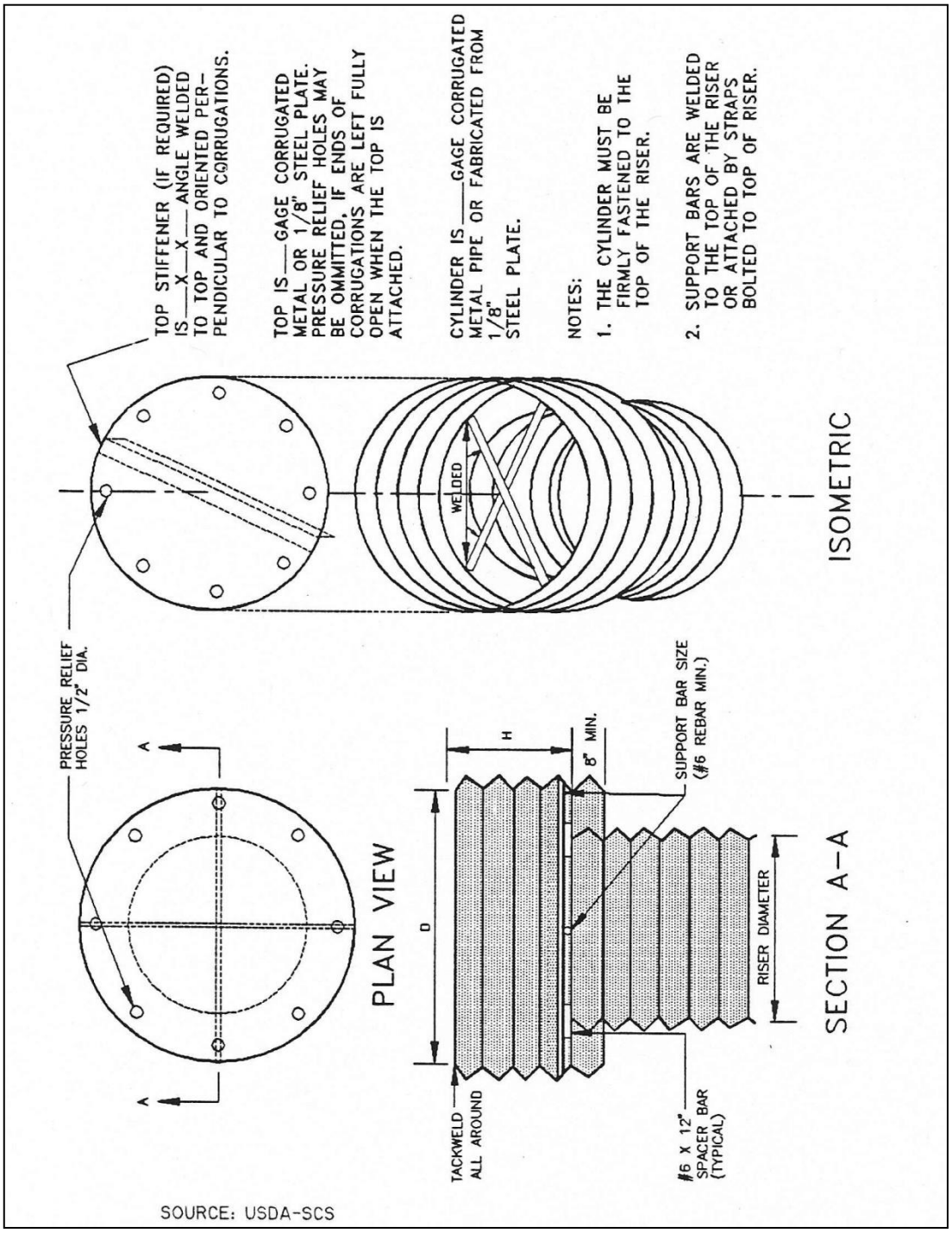


Figure 3.26 Example of Anti-Vortex Design for Corrugated Metal Pipe Riser

Table 3.8 Trash Rack and Anti-Vortex Device Design Table

Riser Diam., in.	Cylinder		Height inches	Minimum Size Support Bar	Minimum Top	
	Diameter inches	Thickness gage			Thickness	Stiffener
12	18	16	6	#6 Rebar or 1 ½ x 1 ½ x 3/16 angle	16 ga. (F&C)	-
15	21	16	7	" "	" "	-
18	27	16	8	" "	" "	-
21	30	16	11	" "	16 ga.(C), 14 ga.(F)	-
24	36	16	13	" "	" "	-
27	42	16	13	" "	" "	-
36	54	14	17	#8 Rebar	14 ga.(C), 12 ga.(F)	-
42	60	16	19	" "	" "	-
48	72	16	21	1 ¼" pipe or 1 ½ x 1 ½ x ¼ angle	14 ga.(C), 10 ga.(F)	-
54	78	16	25	" "	" "	-
60	90	14	29	1 ½" pipe or 1 ½ x 1 ½ x ¼ angle	12 ga.(C), 8 ga.(F)	-
66	96	14	33	2" pipe or 2 x 2 x 3/16 angle	12 ga.(C), 8	2 x 2 x ¼ angle
72	102	14	36	" "	" "	2 ½ x 2 ½ x ¼ angle
78	114	14	39	2 ½" pipe or 2 ½ x ¼ angle	" "	" "
84	120	12	42	2 ½" pipe or 2 ½ x 2 ½ x ¼ angle	" "	2 ½ x 2 ½ x 5/16 angle

Note$_1$: The criterion for sizing the cylinder is that the area between the inside of the cylinder and the outside of the riser is equal to or greater than the area inside the riser. Therefore, the above table is invalid for use with concrete pipe risers.
Note$_2$: Corrugation for 12"-36" pipe measures 2 ⅔ x ½"; for 42"-84" the corrugation measures 5" x 1" or 8" x 1".
Note$_3$: C = corrugated; F = flat.

Source: Adapted from USDA-SCS and Carl M. Henshaw Drainage Products Information.

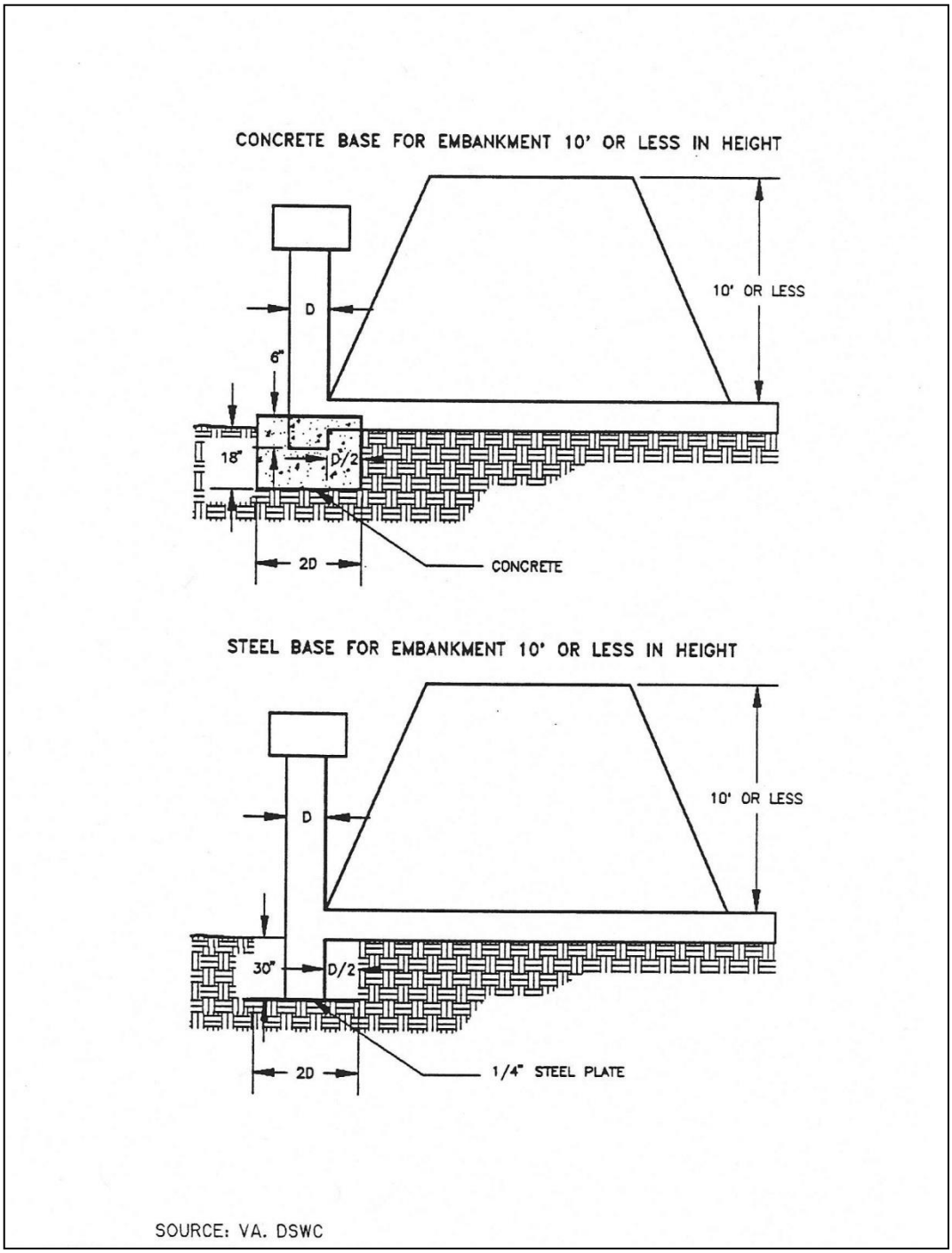


Figure 3.27 Riser Pipe Base Design for Embankment Less Than 10 Feet High

3.9.8 Design Form

Note: This design form is for basins designed with a riser as its primary outlet. It is provided as an example of the type of documentation required for a sediment basin. Different calculations will be needed for other types of outlets.

Project _____

Basin # _____ Location _____

Total area draining to basin: _____ acres.

Total disturbed area draining to basin: _____ acres.

Basin Volume Design

1. Minimum required volume is the lesser of

   a.) (3600 cu. ft. x _____ total drainage acres) / 27 = _____ cu. yds.

   b.) 2 yr, 24 hr storm volume in cubic yards = _____ cu. yds.

2. Total available basin volume at crest of riser* = _____ cu. yds. at elevation _____.
   (From Storage - Elevation Curve)

   * Minimum = Lesser of 3600 cubic feet/acre of Total Drainage Area or
   2yr. 24 hr. storm volume from Disturbed Area drained

3. Excavate _____ cu. yds. to obtain required volume*.

   *Elevation corresponding to required volume = invert of the dewatering orifice.

4. Diameter of dewatering orifice = _____ in.

5. Diameter of flexible tubing = _____ in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

6. Crest of Riser = _____

   Top of Dam = _____

   Design High Water = _____

   Upstream Toe of Dam = _____

Basin Shape

7. Length of Flow / Effective Width $\frac{L}{We}$ = _____

   If > 2, baffles are not required _____

   If < 2, baffles are required _____

Runoff

8. Q_2 = _____ cfs (From TR-55)

9. Q_{25} = _____ cfs (From TR-55)

Basin Outlet Design

10. With emergency spillway, required basin outlet capacity $Q_p = Q_2$ = _____ cfs. (riser and outfall)

    Without emergency spillway, required basin outlet capacity $Q_p = Q_{25}$ = _____ cfs. (riser and outfall)

11. With emergency spillway:

    Assumed available head (h) = _____ ft. (Using Q_2)

    h = Crest of Emergency Spillway Elevation - Crest of Riser Elevation

    Without emergency spillway:

    h = Design High Water Elevation - Crest of Riser Elevation

12. Riser diameter (D_r) = _____ in. Actual head (h) = _____ft.

    (Figure 3.23)

    Note: Avoid orifice flow conditions.

13. Barrel length (l) = _____ ft.

    Head (H) on outfall through embankment = _____ ft.

    (Figure 3.24)

14. Barrel Diameter = _____ in.

    (From Table 3.5 [concrete pipe] or Table 3.6 [corrugated pipe]).

15. Trash rack and anti-vortex device

    Diameter = _____ inches.

    Height = _____ inches.

    (From Table 3.8).

Emergency Spillway Design

16. Required spillway capacity $Q_e = Q_{25} - Q_p$ = _____ cfs.

17. Bottom width (b) = _____ ft.; the slope of the exit channel(s) = _____ ft./foot; and the minimum length of the exit channel (x) = _____ ft.
    (From Figure 3.25 and Table 3.7).

Final Design Elevations

18. Top of Dam = _____

    Design High Water = _____

    Emergency Spillway Crest = _____

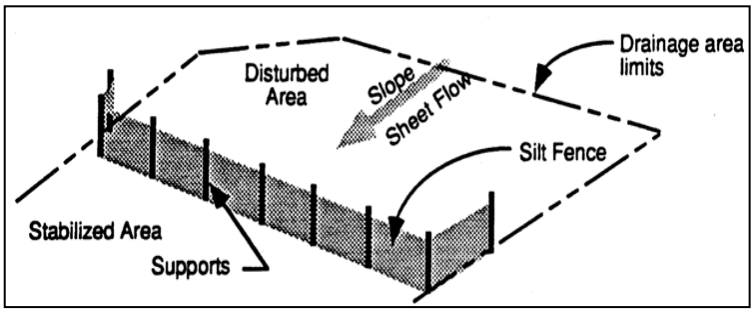
    Basin Riser Crest = _____

    Dewatering Orifice Invert = _____

    Elevation of Upstream Toe of Dam
    (if excavation was performed) = _____

3.10 Silt Fence

Sediment Control



Description: A silt fence consists of geotextile fabric supported by wire mesh netting or other backing stretched between metal posts with the lower edge of the fabric securely embedded six-inches in the soil. The fence is typically located downstream of disturbed areas to intercept runoff in the form of sheet flow. A silt fence provides both filtration and time for sediment settling by reducing the velocity of the runoff.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Maximum drainage area of 0.25 acre per 100 linear feet of silt fence
- Maximum 200 feet distance of flow to silt fence; 50 feet if slope exceeds 10 percent
- Minimum fabric overlap of 3 feet at abutting ends; join fabric to prevent leakage
- Turn end of silt fence line upslope a minimum of 10 feet
- Install stone overflow structure at low points or spaced at approximately 300 feet if no apparent low point

ADVANTAGES / BENEFITS:

- Economical means to treat sheet flow
- Most effective with coarse to silty soil types

DISADVANTAGES / LIMITATIONS:

- Limited effectiveness with clay soils due to clogging
- Localized flooding due to minor ponding at the upslope side of the silt fence
- Not for use as check dams in swales or low areas subject to concentrated flow
- Not for use where soil conditions prevent a minimum toe-in depth of 6 inches or installation of support posts to a depth of 12 inches
- Can fail structurally under heavy storm flows, creating maintenance problems and reducing effectiveness

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Repair undercutting, sags and other fence failures
- Remove sediment before it reaches half the height of the fence
- Repair or replace damaged or clogged filter fabric

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

- **Perimeter Control**
- **Slope Protection**
- **Sediment Barrier**
- **Channel Protection**
- **Temporary Stabilization**
- **Final Stabilization**
- **Waste Management**
- **Housekeeping Practices**

Fe=0.50-0.75
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ● Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *Effects of ponding or the redirection of flow onto adjacent areas and property*

3.10.1 Primary Use

Silt fence is normally used as a perimeter control on the down slope side of disturbed areas and on side slopes where stormwater may runoff the area. It is only feasible for non-concentrated, sheet flow conditions. If it becomes necessary to place a silt fence where concentrated flows may be occur (e.g. where two silt fences join at an angle, or across minor channels or gullies), it will be necessary to reinforce the silt fence at that area by a rock berm or sand bag berm, or other structural measures that will support the silt fence.

3.10.2 Applications

Silt fence is an economical means to treat overland, non-concentrated flows for all types of projects. Silt fences are used as perimeter control devices for both site developers and linear (roadway) type projects. They are most effective with coarse to silty soil types. Due to the potential of clogging and limited effectiveness, silt fences should be used with caution in areas that have predominantly clay soil types. In this latter instance, a soils engineer or soil scientist should confirm the suitability of silt fence for that application. Additional controls may be needed to remove fine silts and clay soils suspended in stormwater.

3.10.3 Design Criteria

- Fences are to be constructed along a line of constant elevation (along a contour line) where possible.
- Silt fence can interfere with construction operations; therefore, planning of access routes onto the site is critical.
- Maximum drainage area shall be 0.25 acre per 100 linear feet of silt fence.
- Maximum flow to any 20 foot section of silt fence shall be 1 CFS.
- Maximum distance of flow to silt fence shall be 200 feet or less. If the slope exceeds 10 percent the flow distance shall be less than 50 feet.
- Maximum slope adjacent to the fence shall be 2:1.
- Silt fences shall not be used where there is a concentration of water in a channel, drainage ditch or swale, nor should it be used as a control on a pipe outfall.
- If 50 percent or less soil, by weight, passes the U.S. Standard Sieve No. 200; select the apparent opening size (A.O.S.) to retain 85percent of the soil.
- If 85 percent or more of soil by weight, passes the U.S. Standard Sieve No. 200, silt fences shall not be used unless the soil mass is evaluated and deemed suitable by a soil scientist or geotechnical engineer concerning the erodiblity of the soil mass, dispersive characteristics, and the potential grain-size characteristics of the material that is likely to be eroded.
- Stone overflow structures or other outlet control devices shall be installed at all low points along the fence or spaced at approximately 300 feet if there is no apparent low point.
- Filter stone for overflow structure shall be 1 ½ inches washed stone containing no fines. Angular shaped stone is preferable to rounded shapes.
- Silt fence fabric must meet the following minimum criteria:
    - Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles, 90-lbs.
    - Puncture Rating, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 60-lbs.
    - Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 280-psi.

  - Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Sieve No. 30(max) to No. 100 (min).
  - Ultraviolet Resistance, ASTM D4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus, Minimum 70 percent.
- Fence posts shall be steel and may be T-section or L-section, 1.3 pounds per linear foot minimum, and 4 feet in length minimum. Wood posts may be used depending on anticipated length of service and provided they are 4 feet in length minimum and have a nominal cross section of 2 inches by 4 inches for pine or 2 inches by 2 inches for hardwoods.
- Silt fence shall be supported by steel wire fence fabric as follows:
  - 4 inch x 4 inch mesh size, W1.4 /1.4, minimum 14 gauge wire fence fabric;
  - Hog wire, 12 gauge wire, small openings installed at bottom of silt fence;
  - Standard 2 inch x 2 inch chain link fence fabric; or
  - Other welded or woven steel fabrics consisting of equal or smaller spacing as that listed herein and appropriate gauge wire to provide support.
- Silt Fence shall consist of synthetic fabric supported by wire mesh and steel posts set a minimum of 1-foot depth and spaced not more than 6-feet on center.
- A 6 inch wide trench is to be cut 6 inches deep at the toe of the fence to allow the fabric to be laid below the surface and backfilled with compacted earth or gravel to prevent bypass of runoff under the fence. Fabric shall overlap at abutting ends a minimum of 3 feet and shall be joined such that no leakage or bypass occurs. If soil conditions prevent a minimum toe-in depth of 6 inches or installation of support post to depth of 12 inches, silt fences shall not be used.
- Sufficient room for the operation of sediment removal equipment shall be provided between the silt fence and other obstructions in order to properly maintain the fence.
- The last 10 feet (or more) at the ends of a line of silt fence shall be turned upslope to prevent bypass of stormwater. Additional upslope runs of silt fence may be needed every 200 to 400 linear feet, depending on the traverse slope along the line of silt fence.

3.10.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.5 Silt Fence and in the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges (TxDot 2004) Item 506.2.J and Item 506.4.C.9.

The American Society for Testing and Materials has established standard specifications for silt fence materials (ASTM D6461) and silt fence installation (ASTM D6462).

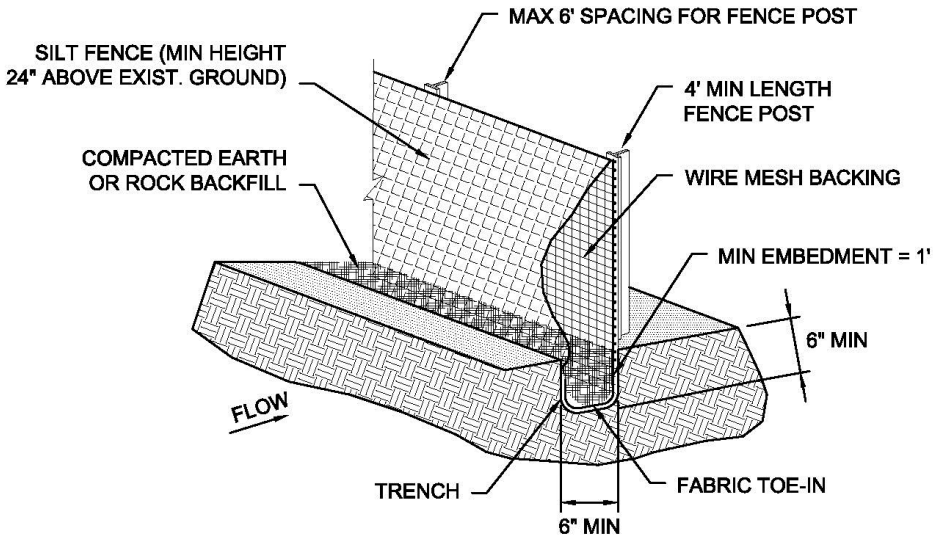
3.10.5 Inspection and Maintenance Requirements

Silt fence should be inspected regularly (at least as often as required by the TPDES Construction General Permit) for buildup of excess sediment, undercutting, sags, and other failures. Sediment should be removed before it reaches half the height of the fence. In addition, determine the source of excess sediment and implement appropriate measures to control the erosion. Damaged or clogged fabric must be repaired or replaced as necessary.

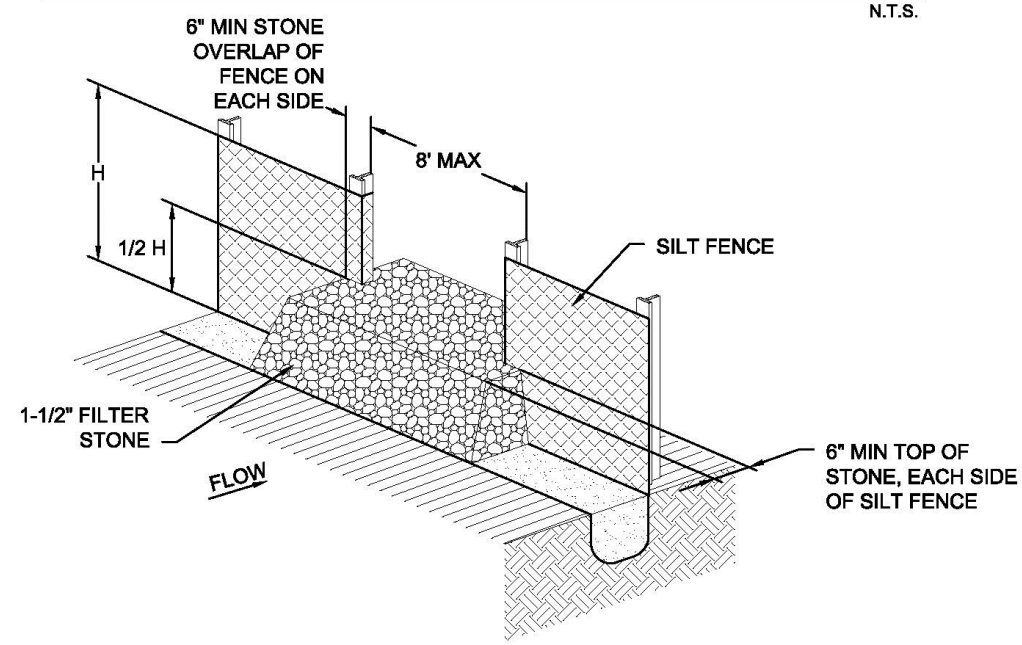
3.10.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.



SILT FENCE EXAMPLE
N.T.S.



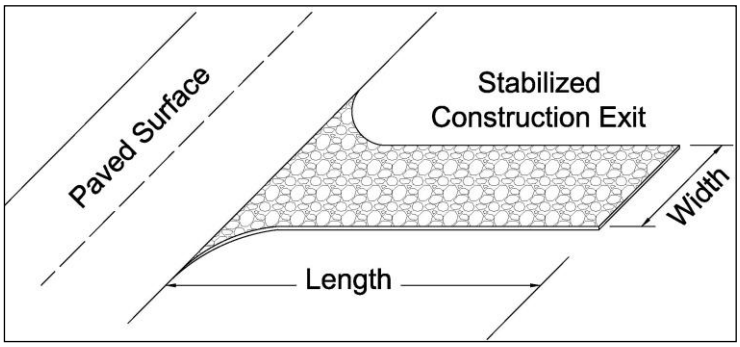
STONE OVERFLOW STRUCTURE EXAMPLE
N.T.S.

NOTES:
1. DESIGN SHALL SHOW ON THE DRAWINGS THE LOCATIONS WHERE OVERFLOW STRUCTURES SHALL BE INSTALLED. OVERFLOW STRUCTURES ARE REQUIRED AT ALL LOW POINTS AND AT A SPACING OF APPROXIMATELY 300 FT WHERE NO LOW POINT IS APPARENT.
2. DESIGNER SHALL ON THE DRAWINGS THE LOCATIONS WHERE SILT FENCE IS TO BE TURNED UPSLOPE. UPSLOPE LENGTHS SHALL BE A MINIMUM OF 10 FEET.

Figure 3.28 Schematics of Silt Fence

3.11 Stabilized Construction Exit

Sediment Control



Description: A stabilized construction exit is a pad of crushed stone, recycled concrete or other rock material placed on geotextile filter cloth to dislodge soil and other debris from construction equipment and vehicle tires prior to exiting the construction site. The object is to minimize the tracking of soil onto public roadways where it will be suspended by stormwater runoff.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Slope exit away from offsite paved surface
- Minimum width and length dependent on size of disturbed area, which correlates to traffic volume
- 6 inches minimum thickness of stone layer
- Stone of 3 to 5 inches in size
- Add a wheel cleaning system when inspections reveal the stabilized exit does not prevent tracking

ADVANTAGES / BENEFITS:

- Reduces tracking of soil onto public streets
- Directs traffic to a controlled access point
- Protects other sediment controls by limiting the area disturbed

DISADVANTAGES / LIMITATIONS:

- Effectiveness dependent on limiting ingress and egress to the stabilized exit
- A wheel washing system may also be required to remove clay soil from tires, particularly in wet conditions

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Replace rock when sediment in the void area between the rocks is visible on the surface
- Periodically re-grade and top dress with additional stone to maintain efficiency

TARGETED POLLUTANTS

- ◒ Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier
Channel Protection
Temporary Stabilization
Final Stabilization
Waste Management
Housekeeping Practices

Fe=N/A

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ○ Suitability for Slopes > 5%

Other Considerations:

- *None*

3.11.1 Primary Use

Stabilized construction exits are used to remove soil, mud and other matter from vehicles that drive off of a construction site onto public streets. Stabilized exits reduce the need to remove sediment from streets. When used properly, they also control traffic by directing vehicles a single (or two for larger sites) location. Controlling traffic onto and off of the site reduces the number and quantity of disturbed areas and provides protection for other sediment controls by decreasing the potential for vehicles to drive over the control.

3.11.2 Applications

Stabilized construction exits are used on all construction sites with a disturbed area of one acre or larger and are a recommended practice for smaller construction sites. A stabilized exit is used on individual residential lots until the driveway is placed. Stabilized construction exits may be used in conjunction with wheel cleaning systems as described in *Section 3.16 Wheel Cleaning Systems*.

3.11.3 Design Criteria

- Limit site access to one route during construction, if possible; two routes for linear and larger projects.
- Prevent traffic from avoiding or shortcutting the full length of the construction exit by installing barriers. Barriers may consist of silt fence, construction safety fencing, or similar barriers.
- Design the access point(s) to be at the upslope side of the construction site. Do not place construction access at the lowest point on the construction site.
- Stabilized construction exits are to be constructed such that drainage across the exit is directed to a controlled, stabilized outlet onsite with provisions for storage, proper filtration, and removal of wash water.
- The exit must be sloped away from the paved surface so that stormwater from the site does not discharge through the exit onto roadways.
- Minimum width of exit shall be 15 feet.
- The construction exit material shall be a minimum thickness of 6 inches. The stone or recycled concrete used shall be 3 to 5 inches in size with little or no fines.
- The geotextile fabric must meet the following minimum criteria:
    - Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles, 300 lbs.
    - Puncture Strength, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 120 lbs.
    - Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 600 psi.
    - Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Sieve No. 40 (max).
- Rock by itself may not be sufficient to remove clay soils from wheels, particularly in wet conditions. When necessary, vehicles must be cleaned to remove sediment prior to entering paved roads, streets, or parking lots. Refer to *Section 3.16 Wheel Cleaning Systems* for additional controls.
- Using water to wash sediment from streets is prohibited
- Minimum dimensions for the stabilized exit shall be as follows:

Table 3.9 Minimum Exit Dimensions		
Disturbed Area	*Min. Width of Exit*	*Min. Length of Exit*
< 1 Acre	15 feet	20 feet
≥ 1 Acre but < 5 Acres	25 feet	50 feet
≥ 5 Acres	30 feet	50 feet

- If a wheel cleaning system is used, the width of the stabilized exit may be reduced to funnel traffic into the system. Refer to *Section 3.16 Wheel Cleaning*.

3.11.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.10 Stabilized Construction Entrance and in the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges (TxDOT 2004) Item 506.2.E and Item 506.4.C.5.

3.11.5 Inspection and Maintenance Requirements

Construction exits should be inspected regularly (at least as often as required by the TPDES Construction General Permit). The stabilized construction exit shall be maintained in a condition that prevents tracking or flow of sediment onto paved surfaces. Periodic re-grading and top dressing with additional stone must be done to keep the efficiency of the exit from diminishing. The rock shall be re-graded when ruts appear. Additional rock shall be added when soil is showing through the rock surface.

Additional controls are needed if inspections reveal a properly installed and maintained exit, but tracking of soil outside the construction area is still evident. Additional controls may be daily sweeping of all soil spilled, dropped, or tracked onto public rights-of-way or the installation of a wheel cleaning system.

3.11.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.

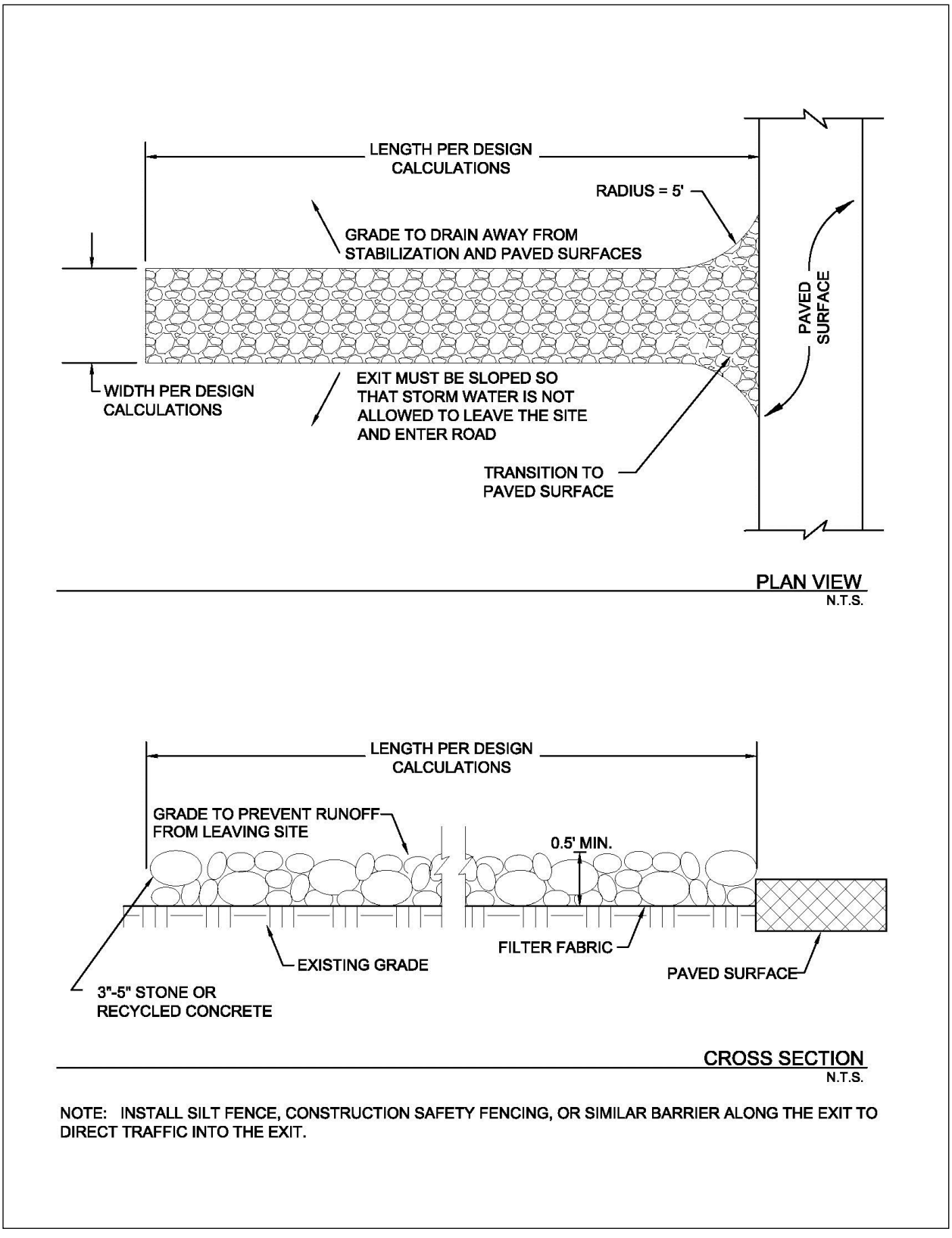
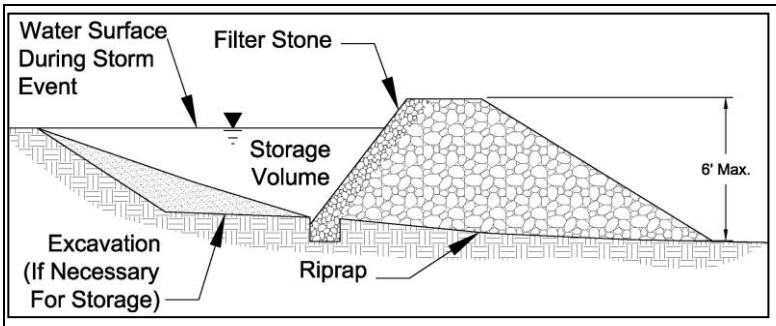


Figure 3.29 Schematics of Stabilized Construction Exit

3.12 Stone Outlet Sediment Trap

Sediment Control



Description: A stone outlet sediment trap is a small detention area formed by placing a stone embankment with an integral stone filter outlet across a drainage swale for the purpose of detaining sediment-laden runoff from construction activities. The sediment trap detains runoff long enough to allow most of the suspended sediment to settle while still allowing for diffused flow of runoff.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Maximum contributing drainage area of 10 acres for excavated trap and 5 acres for bermed trap
- Provide storage volume for the 2-year, 24-hour design storm
- Maximum embankment height of 6 feet
- Embankment slope of 1.5:1 or flatter
- 2 foot minimum top width

ADVANTAGES / BENEFITS:

- Effectively traps sediment in a drainage swale
- Reduces flow velocities
- Relatively long effective life

DISADVANTAGES / LIMITATIONS:

- Amount of land required
- Can cause minor upstream flooding, possibly impacting construction operations
- Not for use in "live" (normally flowing) channels

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Replace filter stone when it appears to be silted in such that efficiency is diminished
- Remove trash and debris after each storm event
- Remove deposited sediment when before the storage capacity is reduced by one third or has reached a depth of one foot, whichever is less

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier
Channel Protection
Temporary Stabilization
Final Stabilization
Waste Management
Housekeeping Practices

Fe=0.50-0.85
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ● Suitability for Slopes > 5%

Other Considerations:

- *Re-grading and stabilization of the control area after construction*

3.12.1 Primary Use

A sediment trap is used where flows are concentrated in a drainage swale or channel. The sediment trap detains and temporarily impounds stormwater, which allows for settling of sediment as the water is slowly discharged from the trap. Sediment traps may be used in combination with check dams when erosive velocities exist in the swale upstream of the sediment trap.

3.12.2 Applications

Temporary stone outlet sediment traps are installed at locations where concentrated flows require a protected outlet to contain sediment or spread flow prior to discharge. They are an effective, long term (12 – 18 months) application for sediment control on large construction sites where a sediment basin is not feasible due to site or construction method restrictions. Several traps may be used to control sediment on drainage sub-basins within the construction site, instead of one large sediment basin at the discharge point from the entire construction site. Sediment traps may also be used with a passive treatment system to provide better removal of fine silt and clay soil particles.

3.12.3 Design Criteria

- Design calculations are required for the use of this control. The designer shall provide drainage computations and dimensions for the stone outlet, berms, and excavated areas associated with this control.
- The maximum drainage area contributing to the trap shall be less than 10 acres for the excavated stone outlet sediment trap and 5 acres or less for the bermed trap.
- The minimum storage volume shall be the volume of runoff from the temporary control design storm (2-year, 24 hour) for the sediment trap's drainage area.
- The surface area of the design storage area shall not be less than 1 percent of the area draining to the device.
- The maximum height of the rock shall be 6 feet, as measured from the toe of the slope on the downstream side to the low point in the rock dam.
- Minimum width of the rock dam at the top shall be 2 feet.
- Rock dam slope shall be 1.5:1 or flatter.
- The rock dam shall have a depressed area, over the center of swale, to serve as the outlet with a minimum width of 4 feet.
- A six inch minimum thickness layer of 1½ inch filter stone shall be placed on the upstream face of the stone embankment when the stormwater runoff contains fine silt and clay soil particles.
- The embankment shall be comprised of well graded stone with a size range of 6 to 12 inches in diameter. The stone may be enclosed in wire mesh or gabion basket and anchored to the channel bottom to prevent washing away.
- The dam shall consist of stone riprap or a combination of compacted fill with a stone riprap outlet.
- Fill placed to constrict the swale for construction of the excavated stone outlet sediment trap and fill placed for the berm in the bermed stone outlet sediment trap shall consist of clay material, minimum Plasticity Index of 30, using ASTM D4318 Standard Test for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- Fill shall be placed in 8 inch loose lifts (maximum) and compacted to 95% Standard Proctor Density at optimum moisture content using ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.
- The outlet shall be designed to have a minimum freeboard of 6" at design flow.

- Rock shall be placed on geotextilefilter fabric meeting the following minimum criteria:
  - Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles, 250-lbs.
  - Puncture Rating, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 135-lbs.
  - Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 420-psi.
  - Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Sieve No. 20 (max).
- The geotextile fabric, covered with a layer of stone, shall extend past the base of the embankment on the downstream side a minimum of 2 feet.

3.12.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.12 Stone Outlet Sediment Trap.

3.12.5 Inspection and Maintenance Requirements

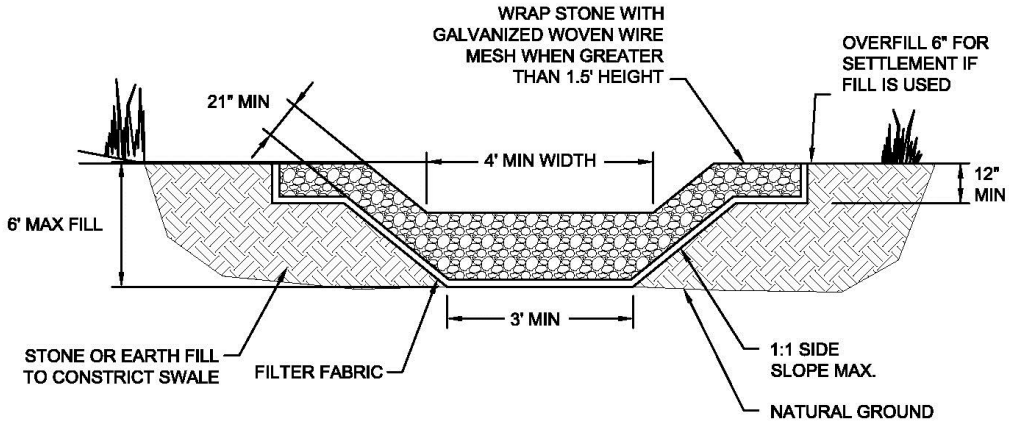
The stone outlet sediment trap should be inspected regularly (at least as often as required by the TPDES Construction General Permit) to check for clogging of the void spaces between stones. If the filter stone appears to be clogged, such that the basin will not completely drain, then the filter stone will require maintenance. If the filter stone is not completely clogged it may be raked with a garden rake to allow the water to release from the basin. If filter stone is completely clogged with mud and sediment, then the filter stone will have to be removed and replaced. Failure to keep the filter stone material properly maintained will lead to clogging of the stone riprap embankment. When this occurs, the entire stone rip-rap structure will need to be replaced. If the aggregate appears to be silted in such that efficiency is diminished, the stone should be replaced.

Trash and debris should be removed from the trap after each storm event to prevent it from plugging the rock. Deposited sediment shall be removed before the storage capacity is decreased by one-third, or sediment has reached a depth of one foot, whichever is less. The removed sediment shall be stockpiled or redistributed in areas that are protected with erosion and sediment controls.

3.12.6 Example Schematics

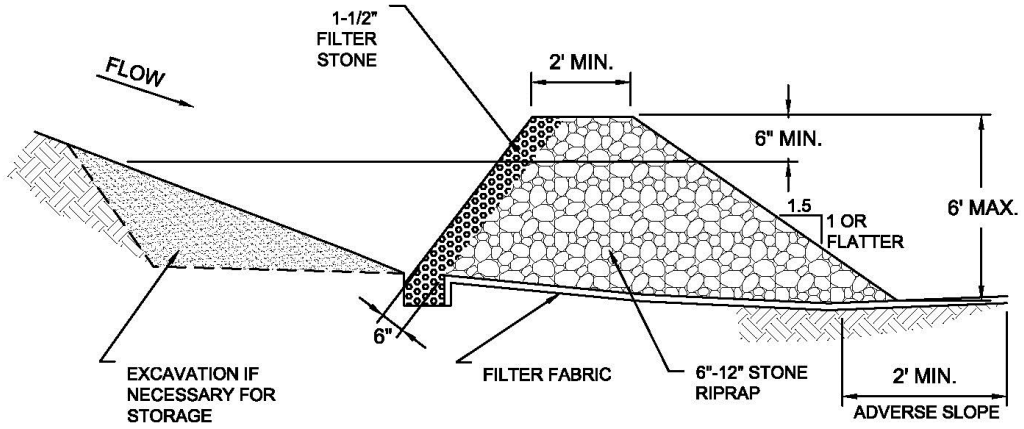
The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.



EXCAVATED STONE OUTLET SEDIMENT TRAP VIEW LOOKING UPSTREAM

N.T.S.



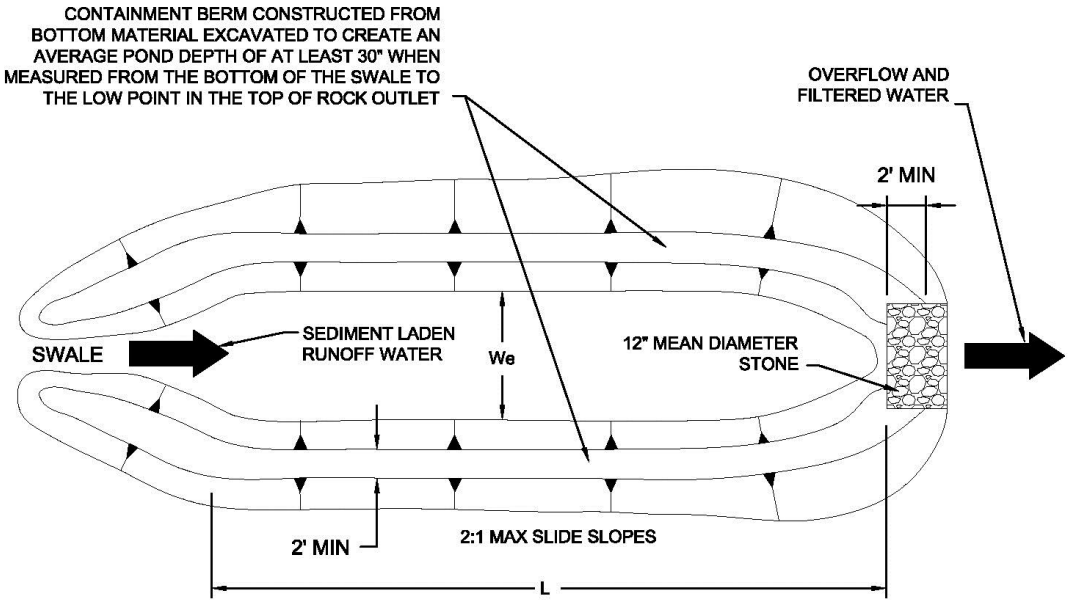
EXCAVATED STONE OUTLET SEDIMENT TRAP SECTION VIEW

N.T.S.

NOTE: ACTUAL DIMENSIONS OF THE SEDIMENT TRAP SHALL BE DESIGNED BASED ON FLOW CONDITIONS AND SITE TOPOGRAPHY. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETER USED TO DESIGN THE TRAP.

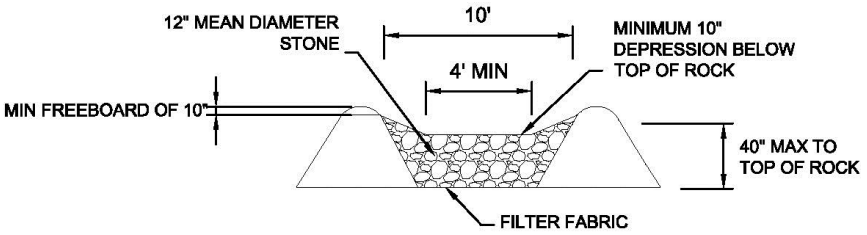
- SIZE OF CONTRIBUTING DRAINAGE AREA
- DESIGN STORM VOLUME AND FLOW RATE AT THE TRAP
- HEIGHT, SLOPE, AND LENGTH OF STONE OUTLET
- STORAGE VOLUME
- EXTENT OF GRADING TO PROVIDE THE CONTROLLED OUTLET

Figure 3.30 Schematics of Excavated Stone Outlet Sediment Trap



BERMED STONE OUTLET SEDIMENT TRAP PLAN VIEW

N.T.S.



BERMED STONE OUTLET SEDIMENT TRAP SECTION VIEW

N.T.S.

NOTE: ACTUAL DIMENSIONS OF THE SEDIMENT TRAP SHALL BE DESIGNED BASED ON FLOW CONDITIONS AND SITE TOPOGRAPHY. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETER USED TO DESIGN THE TRAP.

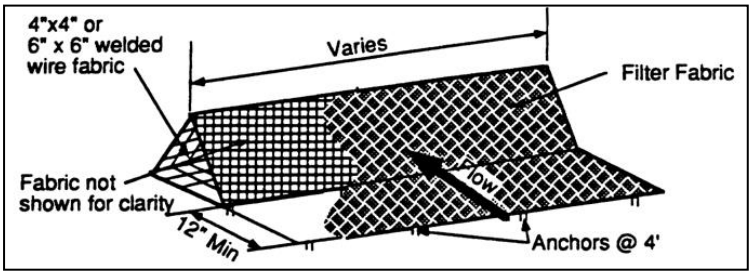
- SIZE OF CONTRIBUTING DRAINAGE AREA
- DESIGN STORM VOLUME AND FLOW RATE AT THE TRAP
- HEIGHT, SLOPE, AND LENGTH OF STONE OUTLET
- STORAGE VOLUME
- EXTENT OF GRADING TO PROVIDE THE CONTROLLED OUTLET

TRIBUTARY AREA (ACRES)	L (FT)	We (FT)
< 0.5	59	13
0.51-1.0	82	16
1.01-1.5	102	20
1.51-2.0	118	23
2.01-2.5	131	26
2.51-3.0	144	30
3.01-3.5	154	30
3.51-4.0	167	33
4.01-4.5	177	36
4.51-5.0	187	36

Figure 3.31 Schematics of Bermed Stone Outlet Sediment Trap
(Source: City of Chesterfield Department of Public Works Detail SC 7.2)

3.13 Triangular Sediment Filter Dike

Sediment Control



Description: A triangular sediment filter dike is a self-contained silt fence consisting of filter fabric wrapped around welded wire fabric and shaped into a triangular cross section. While similar in use to a silt fence, the dike is reusable, sturdier, transportable, and can be used on paved areas or in situations where it is impractical to install embedded posts for support.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Maximum drainage area of 0.25 acre per 100 linear feet of dike
- Maximum 200 feet distance of flow to filter dike; 50 feet if slope exceeds 10 percent
- Overlap ends of filter material 6 inches to cover dike-to-dike junction; secure with shoat rings

ADVANTAGES / BENEFITS:

- Can be installed on paved surfaces or where the soil type prevents embedment of other controls
- Withstands more concentrated flow and higher flow rates than silt fence

DISADVANTAGES / LIMITATIONS:

- Localized flooding due to minor ponding at the upslope side of the filter dike
- Not effective where there are substantial concentrated flows
- Not effective along contours due to the potential for flow concentration and overtopping

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Remove sediment before it reaches 6 inches in depth
- Clean or replace fabric if clogged
- Repair or replace dike when structural deficiencies are found

TARGETED POLLUTANTS

- ● Sediment
- ○ Nutrients & Toxic Materials
- ○ Oil & Grease
- ◒ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

- **Perimeter Control**
- **Slope Protection**
- **Sediment Barrier**
- **Channel Protection**
- **Temporary Stabilization**
- **Final Stabilization**
- **Waste Management**
- **Housekeeping Practices**

Fe=0.50-0.75
(*Depends on soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *Effects of ponding on adjacent areas and property*

3.13.1 Primary Use

Triangular filter dikes are used in place of silt fence, treating sediment flow at the perimeter of construction areas and at the perimeter of the site. Also, the dikes can serve as stream protection devices by preventing sediment from entering the streams or as check dams in small swales.

Triangular sediment filter dikes are especially useful for construction areas surrounded by pavement, where silt fence, filter berm, or other sediment control installations are impractical.

3.13.2 Applications

Triangular dikes are used to provide perimeter control by detaining sediment on a disturbed site with drainage that would otherwise flow onto adjacent properties. Triangular dikes function as sediment trapping devices when used in areas of sheet flow across disturbed areas or are placed along stream banks to prevent sediment-laden sheet flow from entering the stream. The dikes can be subjected to more concentrated flows and a higher flow rate than silt fence.

Dikes can be used on a variety of surfaces where other controls are not effective. They may be installed on paved surfaces and where the soil type prevents embedment of other sediment controls.

3.13.3 Design Criteria

- Dikes are to be installed along a line of constant elevation (along a contour line).
- Maximum drainage area shall be 0.25 acre per 100 linear feet of dike.
- Maximum flow to any 20 foot section of dike shall be 1 CFS.
- Maximum distance of flow to dike shall be 200 feet or less. If the slope exceeds 10 percent, the flow distance shall be less than 50 feet.
- Maximum slope adjacent to the dike shall be 2:1.
- If 50 percent or less of soil, by weight, passes the U.S. Standard Sieve No. 200, select the apparent opening size (A.O.S.) to retain 85 percent of the soil.
- If 85 percent or more of soil, by weight, passes the U.S. Standard Sieve No. 200, triangular sediment dike shall not be used due to clogging.
- The filter fabric shall meet the following minimum criteria:
    - Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles 90-lbs.
    - Puncture Rating, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 60-lbs.
    - Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 280-psi.
    - Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Siev No. 30 (max) to 100 (min).
    - Ultraviolet Resistance, ASTM D4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus, Minimum 70 percent.
- The internal support for the dike structure shall be 6-gauge 6 inch x 6 inch wire mesh or 6-guage 4 inch x 4 inch welded wire fabric folded into triangular form eighteen (18) inches on each side.
- Tie-in to the existing grade should be accomplished by:

  (i) embedding the fabric six-inches below the top of ground on the upslope side;

(ii) extending the fabric to form a 12 inch skirt on the upstream slope and covering it with 3 to 5 inches of 1½ inch washed filter stone; or

(iii) entrenching the base of the triangular dike four inches below ground.

For (ii) above, the skirt and the upslope portion of the triangular dike skeleton should be anchored by metal staples on two-foot centers, driven a minimum of six inches into the ground (except where crossing pavement or exposed limestone). When installed on pavement, the washed rock in option (ii) may be replaced by bags filled with 1½ inch washed filter stone placed at 4 foot spacing to anchor the end of the filter fabric to the pavement.

- Filter material shall lap over ends six (6) inches to cover dike-to-dike junction; each junction shall be secured by shoat rings. Where the dike is placed on pavement, two rock bags shall be used to anchor the overlap to the pavement. Additional bags shall be used as needed to ensure continuous contact with the pavement (no gaps).
- Sand bags or large rock should be used as ballast inside the triangular dike section to stabilize the dike against the effects of high flows.
- Sufficient room for the operation of sediment removal equipment shall be provided between the dike and other obstructions in order to properly remove sediment.
- The ends of the dike shall be turned upgrade to prevent bypass of stormwater.
- When used as a perimeter control on drainage areas larger than 0.5 acres, a stone overflow structure, similar to the one shown in *Section 3.10 Silt Fence*, may be necessary at low points to act as a controlled overflow point in order to prevent localized flooding and failure of the dike.
- If used as check dams in small swales (drainage areas less than 3 acres), the dikes shall be installed according to the spacing and other criteria in *Section 2.1 Check Dam*.

3.13.4 Design Guidance and Specifications

Specifications for construction of this item may be found in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments, Section 201.8 Triangular Sediment Filter Dike.

3.13.5 Inspection and Maintenance Requirements

Triangular sediment filter dikes should be inspected regularly (at least as often as required by the TPDES Construction General Permit). Sediment should be removed before it reaches 6 inches in depth. If the fabric becomes clogged, it should be cleaned or, if necessary, replaced. If structural deficiencies are found, the dike should be immediately repaired or replaced.

The integrity of the filter fabric is important to the effectiveness of the dike. Overlap between dike sections must be checked on a regular basis and repaired if deficient.

3.13.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.

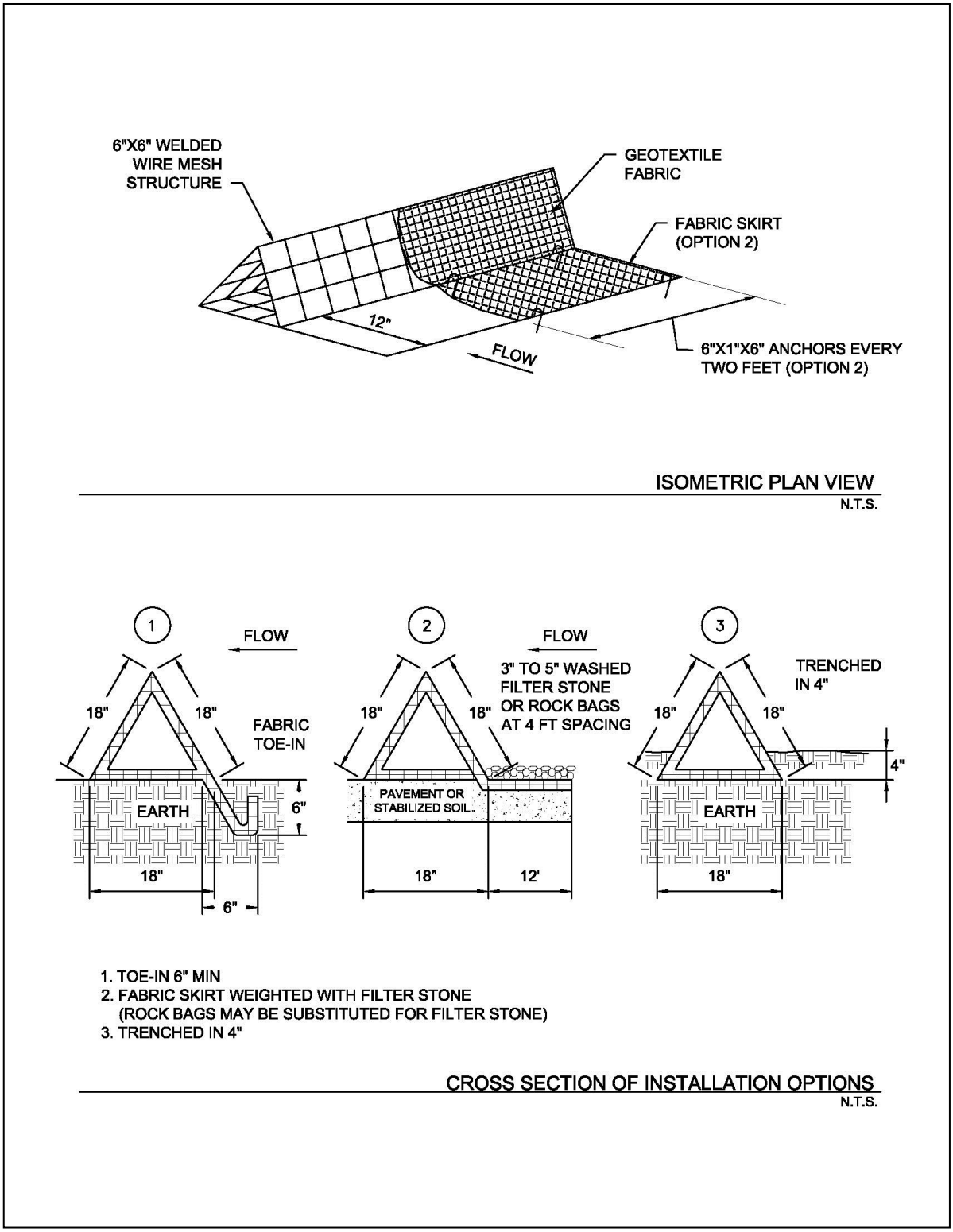
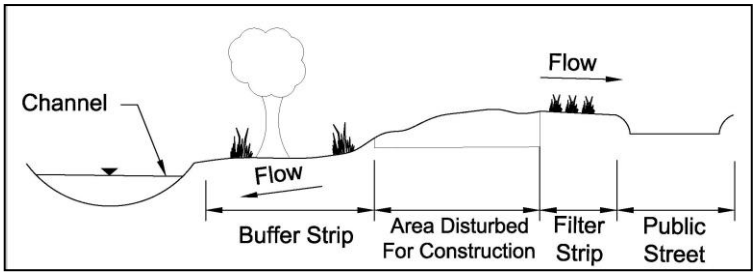


Figure 3.32 Schematics of Triangular Sediment Filter Dike

3.15 Vegetated Filter Strips and Buffers

Sediment Control



Description: Buffer strips (existing vegetation) and filter strips (planted vegetation) are sections of vegetated land adjacent to disturbed areas. They are designed with low slopes to convey sheet flow runoff from disturbed areas, resulting in the removal of sediment and other pollutants as the runoff passes through vegetation and infiltration occurs.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Minimum width (direction of flow across the vegetation) dependent on slope of disturbed area
- Maximum ratio of disturbed area to vegetated area dependent on slope
- Existing vegetation must meet criteria for type and coverage
- Dense grass required for planted vegetation
- Demarcate limits of vegetation and protect from traffic

ADVANTAGES / BENEFITS:

- Effective secondary control for removing clay particles
- Disperses flow and slows velocities to decrease erosion potential in receiving water
- Preserves the character of existing riparian corridor
- May become part of the permanent stormwater controls

DISADVANTAGES / LIMITATIONS:

- Appropriate as a primary control only for drainage areas of 2 acres or less and under certain site conditions
- Maximum 150 feet of flow to vegetated strip or buffer is used as a primary control
- Cannot treat large volumes or concentrated flows
- Not effective as a perimeter control when the perimeter cuts across contours instead of following contours
- Must limit access to vegetated portion of the site

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Rake accumulations of sediment from the vegetation
- Repair bare areas

TARGETED POLLUTANTS

- ● Sediment
- ◒ Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ○ Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier

Channel Protection

Temporary Stabilization

Final Stabilization

Waste Management

Housekeeping Practices

Fe=0.35-0.85
(*Depends on many conditions in addition to soil type*)

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ○ Maintenance
- ○ Training
- ◒ Suitability for Slopes > 5%

Other Considerations:

- *Coordination with final landscaping*

3.15.1 Primary Use

Vegetated filter strips and buffers are used to reduce the velocity of sheet flow and reduce the volume of runoff through infiltration. In the process, sediment is removed as the runoff is filtered through the vegetation and infiltration occurs.

Vegetated filter strips and buffers are frequently used a secondary sediment control, since their performance is highly variable. They may be used as a primary sediment control only for small areas and under select site conditions.

3.15.2 Applications

Vegetated buffers are most applicable on development projects that are adjacent or near to floodplains, wetlands, streams and other natural waterways. Vegetated strips may be established along roads and property lines as a perimeter control for development. They are also applicable along the down slope side of utility line projects.

Vegetated buffers may be a primary sediment control for small areas where the conditions meet design criteria. They are also commonly used as a secondary control with other perimeter controls to provide higher levels of sediment removal. Vegetated areas have more capability to remove fine particle sizes than many conventional sediment controls. Combinations such as an organic filter tube or silt fence at the upslope edge of a vegetated strip are very effective.

In addition to perimeter control, vegetated strips are applicable for slope protection. Strips may be established at regular intervals to interrupt long or steep slopes. The strips maintain sheet flow, decrease velocities, and decrease erosion on the slopes.

3.15.3 Design Criteria

Vegetated buffers should be preserved along existing floodplains, wetlands, channels, and other natural waters whenever possible, even when the buffer is not a primary sediment control. Check for local requirements, as many municipalities mandate a vegetated buffer to maintain the character of the riparian corridor along a natural waterway. Vegetated buffers are encouraged to protect existing waterways by decreasing velocities, dispersing flow, and attenuating volume before the runoff reaches the waterway. If the development plans necessitate disturbing the riparian corridor, phase the development (when possible) to retain a vegetated buffer until final grading and landscaping at the end construction.

The evaluation and use of vegetated strips and buffers for use as a sediment control are unique to each site. The designer should carefully consider slope, vegetation, soils, depth to impermeable layer, depth to ground water, and runoff sediment characteristics before specifying a vegetated strip or buffer as a primary sediment control. This consideration is especially true for buffer strips of existing vegetation. If the buffer is not correctly planned, the first storm event can damage the natural vegetation beyond repair.

Design criteria in this section are only applicable when a vegetated strip or buffer is intended to be a primary or secondary sediment control for the construction site. As discussed above, a vegetated buffer may be preserved for other reasons that do not necessitate the use of these criteria if other sediment controls are provided for the construction site.

General

- Maximum slope of the vegetated strip or buffer shall be 5% across the width of the vegetation in the direction of flow.
- To maintain sheet flow, maximum distance of flow to the vegetated filter shall be 150 feet.
- Vegetated buffers and strips may only serve as a primary sediment control when the contributing drainage area has a slope of 15% or less. On steeper slopes, another perimeter control (e.g. organic filter tube, silt fence) may be installed at the upslope edge of the vegetated buffer or strip as a primary control, with the vegetation serving as a secondary control.

- Maximum disturbed area contributing runoff to the vegetated strip or buffer shall be 2 acres.
- Vegetated filter strips and buffers shall be a minimum of 15 feet wide. Width shall be increased based on the slope of the disturbed area as shown in the following table. Although the slope of the disturbed area may be up 15%, the slope of the vegetated strip or buffer is still limited to 5% maximum if used as a primary control for sediment.

Table 3.10 Sizing of Vegetated Buffers and Strips

Maximum Slope of Contributing Drainage Area	*Maximum Ratio of Disturbed Area to Vegetated Area*	*Minimum Width of Vegetated Area (Direction of Flow)*
5%	8:1	15 feet
10%	5:1	30 feet
15%	3:1	50 feet

- Access to vegetated buffers and strips shall be prohibited. These areas shall be protected from all traffic. No activities should occur in these areas, including no parking of the workers' vehicles, no eating of lunch, etc.
- Install controlled and stabilized ingress/egress points to manage traffic and direct it away from vegetation. Fence the vegetation or provide other means of protection to prevent vehicles and equipment from driving on the vegetated areas.
- Vegetated buffers and filter strips should not be used when high ground water, shallow depth to bedrock, or low soil permeability will inhibit infiltration of runoff.

Buffers of Existing Vegetation

- Fencing, flagged stakes spaced at a maximum of 6 feet, or other measures shall be used to clearly mark existing vegetation that is being preserved as a buffer before the start of any clearing, grubbing, or grading.
- Existing vegetation must be well established to be used as a vegetated buffer. It may be a mix of trees, sapling/shrubs, vines and herbaceous plants. However, the herbaceous plants shall cover at least 80 percent of the ground area.
- Bare soil shall not be visible within the buffer. Area between herbaceous plants shall be covered with a natural litter of organic matter (e.g. leaves, dead grass).
- Lots with a thick stand of existing grasses may preserve strips of the grasses as perimeter control in addition to using vegetation as a buffer along a natural waterway.

Strips of Planted Vegetation

- Vegetated strips should only be used when the site perimeter is along (parallel to) contours. Erosion of the vegetated strip will be a problem when the strip is placed along roads or site perimeters that cut across contours, resulting in runoff flowing along, instead of across, the filter strip.
- Minimize vehicle and equipment traffic and other activities that could compact soils on areas that will be planted for vegetated strips.
- Sod is required when the strip is intended to immediately function as a sediment control.
- Erosion control blankets (ECBs) should be used to prevent erosion and provide sediment control while establishing vegetation for a filter strip. If ECBs are not used, than another perimeter control is required until the vegetation is mature. Refer to *Section 2.3 Erosion Control Blankets*.
- Refer to the *Section 2.9 Vegetation* for criteria on establishing vegetation.
- When using vegetated strips for slope protection, spacing of the strips should be designed based on

slope steepness and type of soil. The strips may be planted directly on the slope grade when the slope is flatter than 2:1. For slopes of 2:1 and steeper, vegetation should be established on terraces. Terraces shall have a transverse slope of 1 percent in the opposite direction of the slope (i.e. back into the ground).

3.15.4 Design Guidance and Specifications

Guidance for analysis of the hydraulic loading on filter strips is in *Section 13.3 of the Stormwater Controls Technical Manual*.

No specification for vegetated filter strips and buffers is currently available in the Standard Specifications for Public Works Construction – North Central Texas Council of Governments.

3.15.5 Inspection and Maintenance Requirements

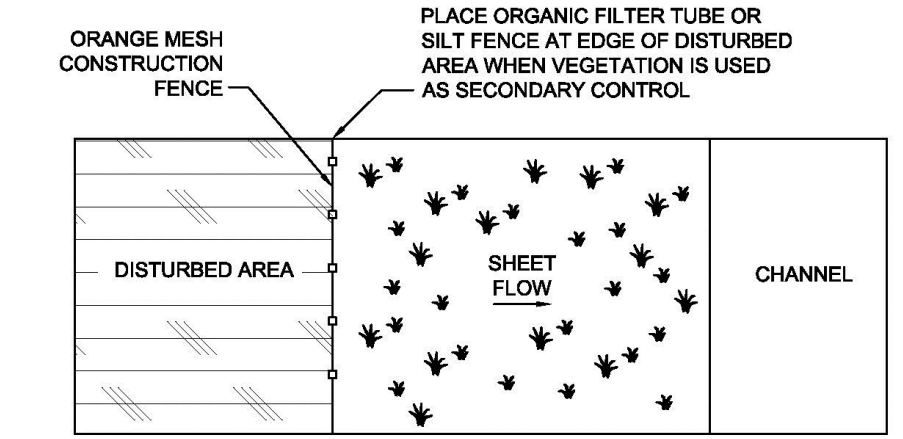
Vegetated filter strips and buffers should be inspected regularly (at least as often as required by the TPDES Construction General Permit). If rill erosion is developing, additional controls are needed to spread the flow before it enters the vegetated area. Rake light accumulations of sediment from the vegetation. Remove trash that accumulates in the vegetation. Additional sediment controls (e.g. a line of organic filter tubes or silt fence), are needed if sediment accumulations are large enough to bury the vegetation.

Inspect established planted vegetation for bare areas and place sod or install seeded erosion control blankets, as appropriate. Mow as needed after planted vegetation is mature.

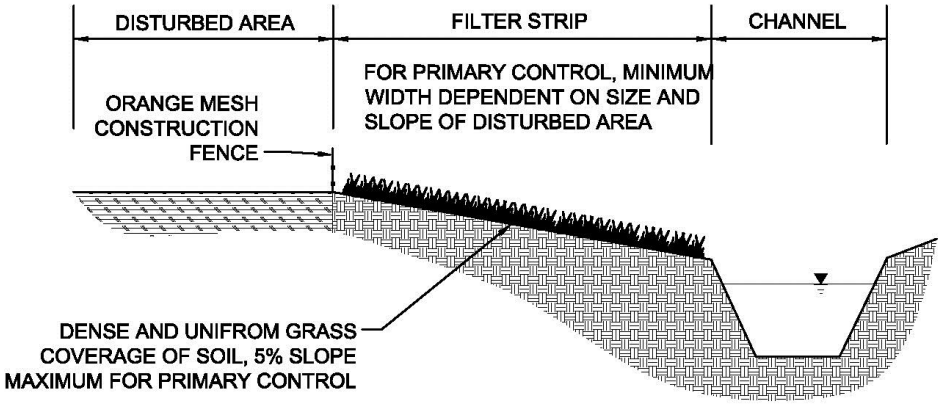
3.15.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.



VEGETATED FILTER STRIP PLAN VIEW
N.T.S.



VEGETATED FILTER STRIP PROFILE VIEW
N.T.S.

Figure 3.35 Schematics of Vegetated Filter Strip

4.3 Concrete Waste Management

Waste Control

Description: Concrete waste at construction sites comes in two forms: 1) excess fresh concrete mix, including residual mix washed from trucks and equipment, and 2) concrete dust and concrete debris resulting from demolition. Both forms have the potential to impact water quality through stormwater runoff contact with the waste. The objective of concrete waste management is to dispose of these wastes in a manner that protects surface and ground water.

KEY CONSIDERATIONS

DESIGN CRITERIA:

- Prohibit the discharge of untreated concrete washout water
- Prohibit dumping waste concrete anywhere except at pre-determined, regulated, recycling or disposal sites
- Provide a washout containment with a minimum of 6 cubic feet of containment volume for every 10 cubic yards of concrete placed
- Minimum 1 foot freeboard on containment
- Minimum 10 mil plastic lining of containment
- Washout water evaporation and concrete recycling are the recommended disposal methods
- Educate drivers and operators on proper disposal and equipment cleaning procedures

LIMITATIONS:

- Does not address concrete sawcutting waste

MAINTENANCE REQUIREMENTS:

- Inspect regularly
- Check for and repair any damage to washout containment areas
- Clean up any overflow of washout pits
- Regularly remove and properly dispose of concrete waste

TARGETED POLLUTANTS

- ○ Sediment
- ● Nutrients & Toxic Materials
- ○ Oil & Grease
- ○ Floatable Materials
- ● Other Construction Wastes

APPLICATIONS

Perimeter Control
Slope Protection
Sediment Barrier
Channel Protection
Temporary Stabilization
Final Stabilization
Waste Management
Housekeeping Practices

IMPLEMENTATION CONSIDERATIONS

- ◒ Capital Costs
- ◒ Maintenance
- ● Training
- ○ Suitability for Slopes > 5%

Other Considerations:

- *None*

4.3.1 Primary Use

Concrete waste management is used to prevent the discharge of concrete wash water and waste into stormwater runoff. A number of water quality parameters can be affected by the introduction of concrete, especially fresh concrete. Concrete affects the pH of runoff, causing significant chemical changes in water bodies and harming aquatic life. Suspended solids in the form of both cement and aggregated dust are also generated from both fresh and demolished concrete waste.

4.3.2 Applications

Concrete waste management is applicable to all construction sites where existing concrete is being demolished or new concrete is being placed, regardless of the size of the total area disturbed. It is also applicable on repair and maintenance projects that may not be required to implement erosion and sediment controls.

4.3.3 Design Criteria

- The discharge of washout water to an inlet, swale, or any portion of the storm drainage system or a natural drainage system (e.g. channel) shall be prohibited.
- Construction plan notes shall state that the discharge of concrete washout to anything except a designated containment area is prohibited.
- Show the location of the concrete washout containment on the drawings, or require the contractor to provide this information.
- The contractor should be required to designate the site superintendent, foreman, or other person who is responsible for concrete placement to also be responsible for concrete waste management.

Unacceptable Waste Concrete Disposal Practices

- Dumping in vacant areas on the job-site.
- Illicit dumping onto off-site lots or any other placed not permitted to receive construction demoliotion debris.
- Dumping into ditches, drainage facilities, or natural water ways.
- Using concrete waste as fill material or bank stabilization.

Recommended Disposal Procedures

- Identify pre-determined, regulated, facilities for disposal of solid concrete waste. Whenever possible, haul the concrete waste to a recycling facility. Disposal facilities must have a Class IV (or more stringent) municipal solid waste permit from the TCEQ.
- A concrete washout pit or other containment shall be installed a minimum of 50 feet away from inlets, swales, drainage ways, channels, and other waters, if the site configuration provides sufficient space to do so. In no case shall concrete washout occur closer than 20 feet from inlets, swales, drainage ways, channels and other waters.
- Provide a washout area with a minimum of 6 cubic feet of containment volume for every 10 cubic yards of concrete poured. Alternatively, the designer may provide calculations sizing the containment based on the number of concrete trucks and pumps to be washed out.
- The containment shall be lined with plastic (minimum 10 millimeters thick) or an equivalent measure to prevent seepage to groundwater.
- Mosquitoes do not typically breed in the high pH of concrete washout water. However, the concrete washout containment should be managed in a manner that prevents the collection of other water that could be a potential breeding habitat.

  - Do not excavate the washout area until the day before the start of concrete placement to minimize the potential for collecting stormwater.
  - Do not discharge any water or wastewater into the containment except for concrete washout to prevent dilution of the high pH environment that is hostile to mosquitoes.
  - Remove the waste concrete and grade the containment closed within a week of completing concrete placement. Do not leave it open to collect stormwater.
  - If water must be pumped from the containment, it shall be collected in a tank, neutralized to lower the pH, and then hauled to a treatment facility for disposal. Alternatively, it may be hauled to a batch plant that has an onsite collection facility for concrete washout water.
  - Do **not** pump water directly from the containment to the Municipal Separate Storm Sewer System or a natural drainage way without treating for removal of fine particles and neutralization of the pH.

- Multiple concrete washout areas may be needed for larger projects to allow for drying time and proper disposal of the washout water and waste concrete.
- Portable, pre-fabricated, concrete washout containers are commercially available and are an acceptable alternative to excavating a washout area.
- Evaporation of the washout water and recycling of the concrete waste is the preferred disposal method. After the water has evaporated from the washout containment, the remaining cuttings and fine sediment shall be hauled from the site to a concrete recycling facility or a solid waste disposal facility.
- Remove waste concrete when the washout containment is half full. Always maintain a minimum of one foot freeboard.
- Use waste and recycling haulers and facilities approved by the local municipality.
- When evaporation of the washout water is not feasible, discharge from the collection area shall only be allowed if a passive treatment system is used to remove the fines. Criteria are in *Section 3.7 Passive Treatment System*. Mechanical mixing is required within the containment for passive treatment to be effective. The pH must be tested, and discharge is allowed only if the pH does not exceed 8.0. The pH may be lowered by adding sulfuric acid to the water. Dewatering of the collection area after treatment shall follow the criteria in *Section 3.3 Dewatering Controls*.
- Care shall be exercised when treating the concrete washout water for discharge. Monitoring must be implemented to verify that discharges do not violate groundwater or surface water quality standards.
- On large projects that are using a nearby batch plant, a washout facility associated with the plant and under the plant's TPDES Multi-Sector General Permit may be used instead of installing an onsite containment area for truck washout.

Education

- Drivers and equipment operators should be instructed on proper disposal and equipment washing practices (see above).
- Supervisors must be made aware of the potential environmental consequences of improperly handled concrete waste.

Enforcement

- The construction site manager or foreman must ensure that employees and pre-mix companies follow proper procedures for concrete disposal and equipment washing.
- Employees violating disposal or equipment cleaning directives must be re-educated or disciplined if necessary.

Demolition Practices

- Monitor weather and wind direction to ensure concrete dust is not entering drainage structures and surface waters.
- Spray water on structures being demolished to wet them before start of demolition operations. Reapply water whenever dust is observed.
- Construct sediment traps or other types of sediment detention devices downstream of demolition activities to capture and treat runoff from demolition wetting operations.

4.3.4 Design Guidance and Specifications

No specification for concrete waste management is currently available in the Standard Specifications for Public Works – North Central Texas Council of Governemtns.

4.3.5 Inspection and Maintenance Requirements

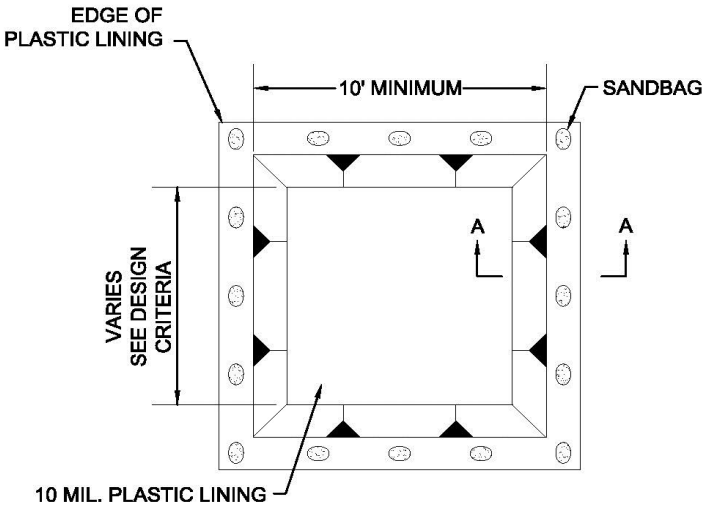
Concrete waste management controls should be inspected regularly (at least as often as required by the TPDES Construction General Permit) for proper handling of concrete waste. Check concrete washout pits and make repairs as needed. Washout pits should not be allowed to overflow. Maintain a schedule to regularly remove concrete waste and prevent over-filling.

If illicit dumping of concrete is found, remove the waste and reinforce proper disposal methods through education of employees.

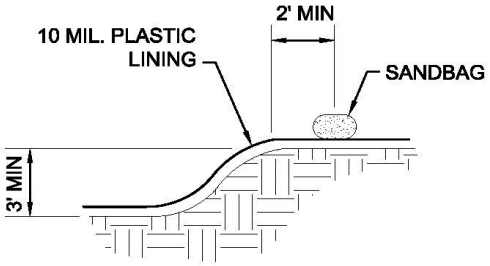
4.3.6 Example Schematics

The following schematics are example applications of the construction control. They are intended to assist in understanding the control's design and function.

The schematics are **not for construction**. They may serve as a starting point for creating a construction detail, but they must be site adapted by the designer. In addition, dimensions and notes appropriate for the application must be added by the designer.



CONCRETE WASHOUT PLAN VIEW
N.T.S.



CONCRETE WASHOUT SECTION A-A
N.T.S.

NOTE: SANDBAGS MAY BE REPLACED BY A SOIL BERM TO ANCHOR THE PLASTIC LINING.

Figure 4.1 Schematics of Concrete Washout Containment

APPENDIX E

INSPECTION AND MAINTENANCE REPORTS

Inspector Qualifications*

Inspector Name: _____

Qualifications (Check as appropriate and provide description):

□ Training Course _____

□ Supervised Experience _____

□ Other _____

Inspector Name: _____

Qualifications (Check as appropriate and provide description):

□ Training Course _____

□ Supervised Experience _____

□ Other _____

Inspector Name: _____

Qualifications (Check as appropriate and provide description):

□ Training Course _____

□ Supervised Experience _____

□ Other _____

**Personnel conducting inspections must be knowledgeable of the general permit, familiar with the construction site, and knowledgeable of the SWP3 for the site.*

INSPECTION SCHEDULE

Inspections must be conducted:

- **Option 1** – at least once every 7 calendar days and within 24 hours of the end of a storm event of 0.25 inch or greater
- **Option 2** – at least once every 7 calendar days, regardless of whether or not there has been a rainfall event since the previous inspection.

Any changes to the schedule are conducted in accordance with the following:

- the schedule is changed a maximum of one time each month,
- the schedule change must be implemented at the beginning of a calendar month, and
- the reason for the schedule change must be documented below.

Date	Schedule Option	Reason for Schedule Change

Construction Site SWP3 Inspection Report

Status		
	☐ Complies	
	☐ Warning	No.
	☐ Project Shutdown	

SWP3	On-Site		Up-to-date	
	Yes	No[1]	Yes	No[2]

General Information		
	Project:	Date:
	Address:	Inspector:
		Qualifications: see Appendix E of SWP3
		Weather Conditions:
	Owner:	Contractor:

BMP	BMP In Use		Maint. Req'd		Comments
	Yes	No	Yes[2]	No	

[1]The SWP3 must be retained on-site at the construction site or, if the site is inactive or does not have an on-site location to store the plan, a notice must be posted describing the location of the SWP3.

[2]Items marked in this column need to be addressed in the Actions to be Taken table.

ACTIONS TO BE TAKEN	RESPONSIBLE PERSON(S)	DUE DATE	DATE COMPLETED	INITIALS

NOTE: These reports will be kept on file as part of the Storm Water Pollution Prevention Plan for at least three years. A copy of the SWP3 will be kept at the site at all times during construction.

CERTIFICATION STATEMENT: *"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

Name:	
Address:	
Telephone:	
Site Location:	
Inspector Signature:	Date:

MAINTENANCE GUIDELINES

1. Below are some maintenance practices to be used to maintain erosion and sediment controls:
   - All control measures will be inspected according to the schedule identified in Appendix E.
   - All measures will be maintained in good working order. The operator should correct any damage or deficiencies as soon as practicable after the inspection, but in no case later than seven (7) calendar days after the inspection.
   - BMP Maintenance (as applicable)
     - Sediment must be removed from sediment traps and sedimentation ponds no later than the time that design capacity has been reduced by 50%. For perimeter controls such as silt fences, berms, etc., the trapped sediment must be removed before it reaches 50% of the above-ground height.
     - Silt fence will be inspected for depth of sediment, tears, to see of the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
     - Drainage swale will be inspected and repaired as necessary.
     - Inlet control will be inspected and repaired as necessary.
     - Check dam will be inspected and repaired as necessary.
     - Straw bale dike will be inspected and repaired as necessary.
     - Diversion dike will be inspected and any breaches promptly repaired.
     - Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.
     - If sediment escapes the site, accumulations must be removed at a frequency that minimizes off-site impacts, and prior to the next rain event, if feasible. If the permittee does not own or operate the off-site conveyance, then the permittee must to work with the owner or operator of the property to remove the sediment.
     - Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.

2. To maintain the above practices, the following will be performed:
   - Maintenance and repairs will be conducted before the next anticipated storm event or as necessary to maintain the continued effectiveness of storm water controls. Following an inspection, deficiencies should be corrected no later than seven (7) calendar days after the inspection.
   - Any necessary revisions to the SWP3 as a result of the inspection must be completed within seven (7) calendar days following the inspection. If existing BMPs are modified or if additional BMPs are necessary, an implementation schedule must be described in the SWP3 and wherever possible those changes implemented before the next storm event.
   - Personnel selected for inspection and maintenance responsibilities must be knowledgeable of the general permit, familiar with the construction site, and knowledgeable of the SWP3 for the site.

APPENDIX F

ROLES AND RESPONSIBILITIES CHECKLIST AND CERTIFICATION STATEMENT

PRIMARY AND SECONDARY OPERATOR GENERAL RESPONSIBILITIES

DEFINITIONS:

Operator - The person or persons associated with a large or small construction activity that is either a primary or secondary operator as defined below:

Primary Operator – the person or persons associated with a large or small construction activity that meets either of the following two criteria:

(a.) the person or persons have operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications, or

(b.) the person or persons have day-to-day operational control of those activities at a construction site that are necessary to ensure compliance with a storm water pollution prevention plan (SWP3) for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the SWP3 or comply with other permit conditions).

Secondary Operator – The person whose operational control is limited to the employment of other operators or to the ability to approve or disapprove changes to plans and specifications. A secondary operator is also defined as a primary operator and must comply with the permit requirements for primary operators if there are no other operators at the construction site.

Please note that both Owners and Contractors can meet the definition of being an Operator and will need to fulfill the associated requirements. The Roles and Responsibilities Checklist and Certification Statement located in Appendix F are to be completed and signed by the Owner and Contractor(s).

Secondary Operators and Primary Operators with Control Over Construction Plans and Specifications

All secondary operators and primary operators with control over construction plans and specifications must:

(a.) ensure the project specifications allow or provide that adequate BMPs are developed to meet the requirements of the general permit,

(b.) ensure that the SWP3 indicates the areas of the project where they have control over project specifications, including the ability to make modifications in specifications,

(c.) ensure all other operators affected by modifications in project specifications are notified in a timely manner so that those operators may modify their best management practices as necessary to remain compliant with the conditions of this general permit, and

(d.) ensure that the SWP3 for portions of the project where they are operators indicates the name and site-specific TPDES authorization numbers for permittees with the day-to-day operational control over those activities necessary to ensure compliance with the SWP3 and other permit conditions. If the party with day-to-day operational control has not been authorized or has abandoned

the site, the person with control over project specifications is considered to be the responsible party until the authority is transferred to another party and the SWP3 is updated.

Primary Operators with Day-to-Day Operational Control

Primary Operators with day-to-day operational control of those activities at a project that are necessary to ensure compliance with the SWP3 and other permit conditions must ensure that the SWP3 accomplishes the following requirements:

(a.) meets the requirements of the general permit for those portions of the project where they are operators,
(b.) the parties responsible for implementation of BMPs described in the SWP3,
(c.) indicates areas of the project where they have operational control over day-to-day activities, and
(d.) includes, for areas where they have operational control over day-to-day activities, the name and site-specific TPDES authorization number of the parties with control over project specifications, including the ability to make modifications in specifications.

Roles and Responsibilities Checklist

Role/Responsibility	Project Owner*	Primary Operator	Secondary Operator
Development of initial design specifications			
Payment for proposed construction activity			
Maintain SWP3 records for three years from the date that a NOT is submitted			
Complete, sign, and postmark NOI at least seven days prior to beginning of construction activity, or Complete, sign, and electronically submit NOI prior to the beginning of construction activity			
Post a copy of the signed NOI at project site and maintain through duration of project			
Post copy of completed construction site notice(s) at project site through duration of project			
Provide a copy of the signed NOI to any secondary operator and to the operator of any MS4 receiving construction site discharge, at least seven days prior to commencing construction activities			
Maintain schedule of major construction activities, keep a copy with SWP3, and retain a copy of the SWP3 at the construction site at all times			
Update SWP3 to reflect daily operations (e.g., revisions, installation dates, grading operation dates, BMP maintenance, and inspection information)			
Update SWP3 to reflect changes in the Contractor's contact information			
Identify, maintain and modify BMPs (as necessary) to control erosion and sedimentation due to construction activities throughout life of project			
Provide stabilized construction entrances and sediment barriers, and clean existing rock and/or add rock to prevent mud and dirt from entering streets or alleys			
Maintain and/or replace sediment barriers and silt traps (if installed), etc. throughout life of project			
Maintain erosion control on stockpiles without blocking drainage paths			
Perform SWP3 inspections in accordance with TPDES General Permit, and keep inspection reports with SWP3			
Based on inspection results, modify SWP3 and pollution prevention controls to maintain that storm water (or identified non-storm water discharges) are the only discharges leaving the site			

Role/Responsibility	Project Owner*	Primary Operator	Secondary Operator
Provide proper management of project-generated trash and debris, including debris collected from storm water protection devices			
Stabilize all disturbed areas related to construction for temporary or permanent ceasing of activities			
Comply with all State and local sanitary sewer or septic system regulations			
Provide copies of all SWP3 records to the Project Owner			
Complete, sign, and submit NOT form to the TCEQ and MS4 Operators when the project has been completed and stabilized			
Complete applicable portion of the site notice related to removal of the notice and submit to the operator of any MS4 receiving site discharge			

**Please note that the Project Owner can meet the definition of an operator. Please refer to the definitions of "primary operator" and "secondary operator" for more information.*

Each operator engaged in activities that disturb surface soils must be identified and must sign the following certification statement. Signatory requirement guidance and an additional certification statement form are attached (Appendix F).

Certification Statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign this document and can provide documentation in proof of such authorization upon request."

Project Owner

Name:_____
Title:_____
Company:_____
Signature:_____
Date:_____
Operator Type:_____

General Contractor

Name:_____
Title:_____
Company:_____
Signature:_____
Date:_____
Operator Type:_____

Subcontractor (as appropriate)

Name:_____
Title:_____
Company:_____
Signature:_____
Date:_____
Operator Type:_____

Subcontractor (as appropriate)

Name:_____
Title:_____
Company:_____
Signature:_____
Date:_____
Operator Type:_____

NOTICE OF INTENT (NOI) LOG			
Name	**Company**	**Date Submitted NOI**	**TPDES Permit No.**

Signature Requirements in 30 TAC §305.44

The purpose of this document is to clarify the signature requirements for water quality permit applications subject to 30 Texas Administrative Code (TAC) section (§)305.44. This includes most applications relating to authorizations issued under 30 TAC Chapter 305 (relating to Consolidated Permits), Chapter 205 (relating to General Permits for Waste Discharges), 30 TAC Chapter 312 (relating to Sludge Use, Disposal and Transportation), and 30 TAC Chapter 321 (relating to Control of Certain Activities By Rule).

TCEQ is currently updating the signatory instructions in its application forms. You may have recently received a notice of deficiency (NOD) letter indicating failure to meet the signatory requirements. Please review the information provided below concerning signatory requirements and have a person authorized to sign under §305.44 and submit the enclosed certification. The certification must clearly indicate the applicant and the original application form subject to the NOD. Upon satisfactory review of your signed certification, your submission will no longer be deficient for failing to meet the signatory requirements.

You are encouraged to use the attached certification page for water quality permit and registration applications, and other authorization forms subject to §305.44, until the forms have been updated.

IF YOU ARE A CORPORATION:

The regulation governing who may sign an application form is 30 TAC §305.44(a)(1) (see attached). According to this provision, any corporate representative may sign an application form so long as the authority to sign such a document has been delegated to that person in accordance with corporate procedures. By signing the application form, you are certifying that such authority has been delegated to you. The TCEQ may request documentation evidencing such authority.

IF YOU ARE A MUNICIPALITY OR OTHER GOVERNMENT ENTITY:

The regulation governing who may sign an application form is 30 Texas Administrative Code §305.44(a)(3) (see attached). According to this provision, only a ranking elected official or principal executive officer may sign an application form. Persons such as the City Mayor or County Commissioner are ranking elected officials. The principal executive officer may be identified in your city charter, county or city ordinances, or the Texas statute(s) under which your governmental entity was formed. An application form that is signed by a governmental official who is not a ranking elected official or principal executive officer does not conform to §305.44(a)(3). The signatory requirement may not be delegated to a government representative other than those identified in the regulation. By signing the application , you are certifying that you are either a ranking elected official or principal executive officer. Documentation demonstrating your position as a ranking elected official or principal executive officer may be requested by the TCEQ.

If you have questions or need additional information concerning the signatory requirements discussed above, please contact either Matt Beeter at (512) 239-1406 or Carol Lear at (512) 239-1025, of the Texas Commission on Environmental Quality's Environmental Law Division.

30 Texas Administrative Code
§305.44. Signatories to Applications.

(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

CERTIFICATION

Permit/Registration No._____

Applicant:_____

I, _____ _____
Typed or printed name *Title*

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign this document and can provide documentation in proof of such authorization upon request.

Signature:_____ Date:_____

APPENDIX G

TPDES GENERAL PERMIT (TXR150000) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Texas Commission on Environmental Quality

P.O. Box 13087, Austin, Texas 78711-3087

GENERAL PERMIT TO DISCHARGE UNDER THE

TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM

under provisions of
Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

This permit supersedes and replaces
TPDES General Permit No. TXR150000, issued March 5, 2008

Construction sites that discharge stormwater associated with construction activity

located in the state of Texas

may discharge to surface water in the state

only according to monitoring requirements and other conditions set forth in this general permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ or Commission), the laws of the State of Texas, and other orders of the Commission of the TCEQ. The issuance of this general permit does not grant to the permittee the right to use private or public property for conveyance of stormwater and certain non-stormwater discharges along the discharge route. This includes property belonging to but not limited to any individual, partnership, corporation or other entity. Neither does this general permit authorize any invasion of personal rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the permittee to acquire property rights as may be necessary to use the discharge route.

This general permit and the authorization contained herein shall expire at midnight, five years from the permit effective date.

EFFECTIVE DATE: March 5, 2013

ISSUED DATE: FEB 19 2013

Bryan W. Shaw

For the Commission

TPDES GENERAL PERMIT NUMBER TXR150000 RELATING TO STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES

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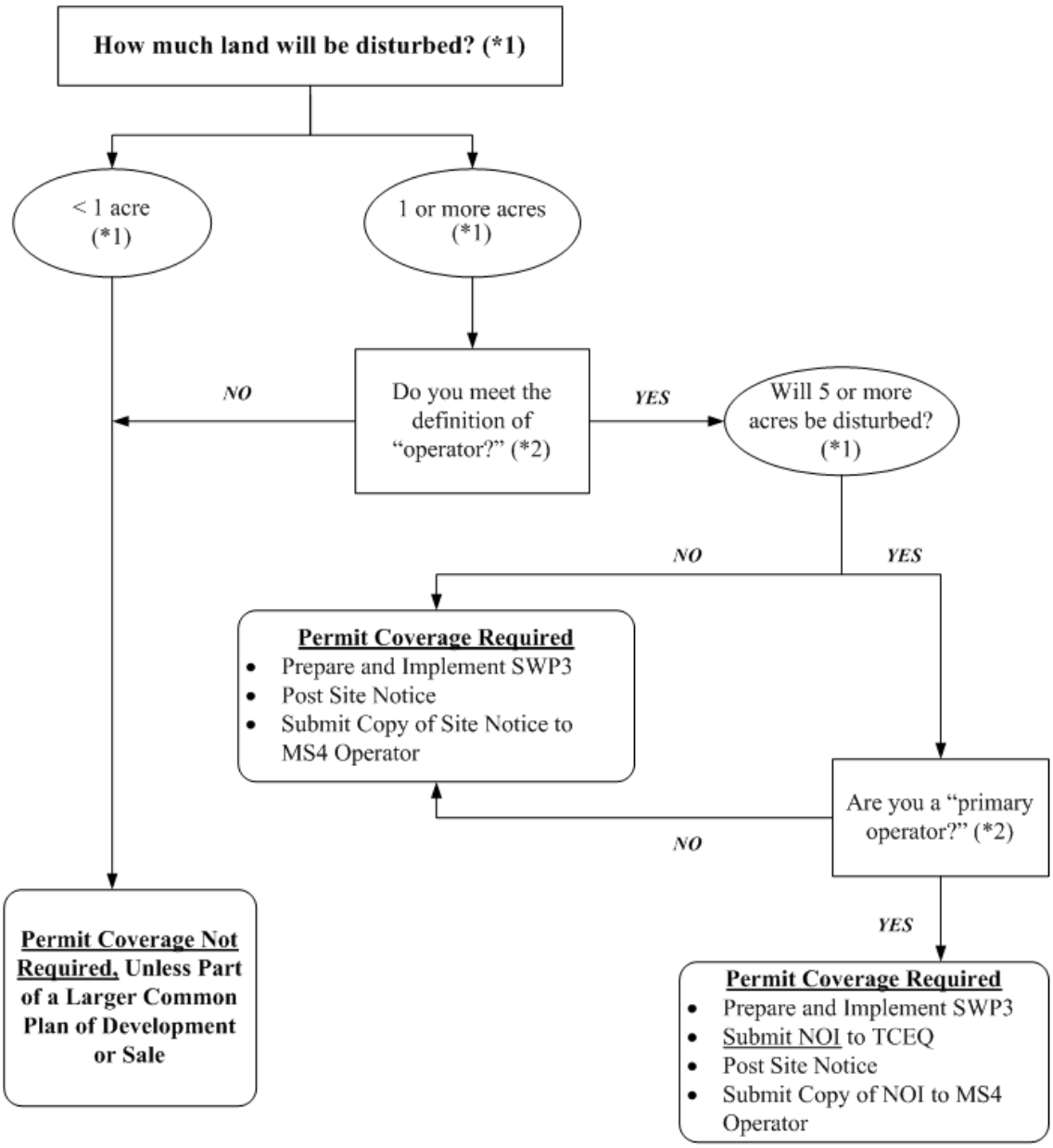
Part I. Flow Chart and Definitions

Section A. Flow Chart to Determine Whether Coverage is Required



(*1) To determine the size of the construction project, use the size of the entire area to be disturbed, and include the size of the larger common plan of development or sale, if the project is part of a larger project (refer to Part I.B., "Definitions," for an explanation of "common plan of development or sale").

(*2) Refer to the definitions for "operator," "primary operator," and "secondary operator" in Part I., Section B. of this permit.

Section B. Definitions

Arid Areas - Areas with an average annual rainfall of 0 to 10 inches.

Best Management Practices (BMPs) - Schedules of activities, prohibitions of practices, maintenance procedures, structural controls, local ordinances, and other management practices to prevent or reduce the discharge of pollutants. BMPs also include treatment requirements, operating procedures, and practices to control construction site runoff, spills or leaks, waste disposal, or drainage from raw material storage areas.

Commencement of Construction - The initial disturbance of soils associated with clearing, grading, or excavation activities, as well as other construction-related activities (e.g., stockpiling of fill material, demolition).

Common Plan of Development - A construction activity that is completed in separate stages, separate phases, or in combination with other construction activities. A common plan of development (also known as a "common plan of development or sale") is identified by the documentation for the construction project that identifies the scope of the project, and may include plats, blueprints, marketing plans, contracts, building permits, a public notice or hearing, zoning requests, or other similar documentation and activities. A common plan of development does not necessarily include all construction projects within the jurisdiction of a public entity (e.g., a city or university). Construction of roads or buildings in different parts of the jurisdiction would be considered separate "common plans," with only the interconnected parts of a project being considered part of a "common plan" (e.g., a building and its associated parking lot and driveways, airport runway and associated taxiways, a building complex, etc.). Where discrete construction projects occur within a larger common plan of development or sale but are located ¼ mile or more apart, and the area between the projects is not being disturbed, each individual project can be treated as a separate plan of development or sale, provided that any interconnecting road, pipeline or utility project that is part of the same "common plan" is not included in the area to be disturbed.

Construction Activity - Includes soil disturbance activities, including clearing, grading, and excavating; and does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site (e.g., the routine grading of existing dirt roads, asphalt overlays of existing roads, the routine clearing of existing right-of-ways, and similar maintenance activities). Regulated construction activity is defined in terms of small and large construction activity.

Dewatering – The act of draining rainwater or groundwater from building foundations, vaults, and trenches.

Discharge – For the purposes of this permit, the drainage, release, or disposal of pollutants in stormwater and certain non-stormwater from areas where soil disturbing activities (e.g., clearing, grading, excavation, stockpiling of fill material, and demolition), construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck wash out, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located.

Drought-Stricken Area – For the purposes of this permit, an area in which the National Oceanic and Atmospheric Administration's U.S. Seasonal Drought Outlook indicates for the period during which the construction will occur that any of the following conditions are likely: (1) "Drought to persist or intensify", (2) "Drought ongoing, some improvement", (3) "Drought likely to improve, impacts ease", or (4) "Drought development likely". See http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html.

Edwards Aquifer - As defined under Texas Administrative Code (TAC) § 213.3 of this title (relating to the Edwards Aquifer), that portion of an arcuate belt of porous, water-bearing, predominantly carbonate rocks known as the Edwards and Associated Limestones in the Balcones Fault Zone trending from west to east to northeast in Kinney, Uvalde, Medina, Bexar, Comal, Hays, Travis, and Williamson Counties; and composed of the Salmon Peak

Limestone, McKnight Formation, West Nueces Formation, Devil's River Limestone, Person Formation, Kainer Formation, Edwards Formation, and Georgetown Formation. The permeable aquifer units generally overlie the less-permeable Glen Rose Formation to the south, overlie the less-permeable Comanche Peak and Walnut Formations north of the Colorado River, and underlie the less-permeable Del Rio Clay regionally.

Edwards Aquifer Recharge Zone - Generally, that area where the stratigraphic units constituting the Edwards Aquifer crop out, including the outcrops of other geologic formations in proximity to the Edwards Aquifer, where caves, sinkholes, faults, fractures, or other permeable features would create a potential for recharge of surface waters into the Edwards Aquifer. The recharge zone is identified as that area designated as such on official maps located in the offices of the Texas Commission on Environmental Quality (TCEQ) and the appropriate regional office. The Edwards Aquifer Map Viewer, located at http://www.tceq.texas.gov/compliance/field_ops/eapp/mapdisclaimer.html, can be used to determine where the recharge zone is located.

Edwards Aquifer Contributing Zone - The area or watershed where runoff from precipitation flows downgradient to the recharge zone of the Edwards Aquifer. The contributing zone is located upstream (upgradient) and generally north and northwest of the recharge zone for the following counties: all areas within Kinney County, except the area within the watershed draining to Segment No. 2304 of the Rio Grande Basin; all areas within Uvalde, Medina, Bexar, and Comal Counties; all areas within Hays and Travis Counties, except the area within the watersheds draining to the Colorado River above a point 1.3 miles upstream from Tom Miller Dam, Lake Austin at the confluence of Barrow Brook Cove, Segment No. 1403 of the Colorado River Basin; and all areas within Williamson County, except the area within the watersheds draining to the Lampasas River above the dam at Stillhouse Hollow reservoir, Segment No. 1216 of the Brazos River Basin. The contributing zone is illustrated on the Edwards Aquifer map viewer at http://www.tceq.texas.gov/compliance/field_ops/eapp/mapdisclaimer.html.

Effluent Limitations Guideline (ELG) – Defined in 40 Code of Federal Regulations (CFR) § 122.2 as a regulation published by the Administrator under § 304(b) of the Clean Water Act (CWA) to adopt or revise effluent limitations.

Facility or Activity – For the purpose of this permit, a construction site or construction support activity that is regulated under this general permit, including all contiguous land and fixtures (for example, ponds and materials stockpiles), structures, or appurtances used at a construction site or industrial site described by this general permit.

Final Stabilization - A construction site status where any of the following conditions are met:

A. All soil disturbing activities at the site have been completed and a uniform (that is, evenly distributed, without large bare areas) perennial vegetative cover with a density of at least 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

B. For individual lots in a residential construction site by either:

   (1) the homebuilder completing final stabilization as specified in condition (a) above; or

   (2) the homebuilder establishing temporary stabilization for an individual lot prior to the time of transfer of the ownership of the home to the buyer and after informing the homeowner of the need for, and benefits of, final stabilization. If temporary stabilization is not feasible, then the homebuilder may fulfill this requirement by retaining perimeter controls or BMPs, and informing the homeowner of the need for removal of temporary controls and the establishment of final stabilization.

Fullfillment of this requirement must be documented in the homebuilder's stormwater pollution prevention plan (SWP3).

C. For construction activities on land used for agricultural purposes (such as pipelines across crop or range land), final stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to surface water and areas that are not being returned to their preconstruction agricultural use must meet the final stabilization conditions of condition (a) above.

D. In arid, semi-arid, and drought-stricken areas only, all soil disturbing activities at the site have been completed and both of the following criteria have been met:

(1) Temporary erosion control measures (for example, degradable rolled erosion control product) are selected, designed, and installed along with an appropriate seed base to provide erosion control for at least three years without active maintenance by the operator, and

(2) The temporary erosion control measures are selected, designed, and installed to achieve 70% of the native background vegetative coverage within three years.

Hyperchlorination of Waterlines – Treatment of potable water lines or tanks with chlorine for disinfection purposes, typically following repair or partial replacement of the waterline or tank, and subsequently flushing the contents.

Impaired Water - A surface water body that is identified on the latest approved CWA §303(d) List as not meeting applicable state water quality standards. Impaired waters include waters with approved or established total maximum daily loads (TMDLs), and those where a TMDL has been proposed by TCEQ but has not yet been approved or established.

Indian Country Land – (from 40 CFR §122.2) (1) all land within the limits of any Indian reservation under the jurisdiction of the United States government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation; (2) all dependent Indian communities with the borders of the United States whether within the originally or subsequently acquired territory thereof, and whether within or without the limits of a state; and (3) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.

Indian Tribe - (from 40 CFR §122.2) any Indian Tribe, band, group, or community recognized by the Secretary of the Interior and exercising governmental authority over a Federal Indian Reservation.

Large Construction Activity - Construction activities including clearing, grading, and excavating that result in land disturbance of equal to or greater than five (5) acres of land. Large construction activity also includes the disturbance of less than five (5) acres of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than five (5) acres of land. Large construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site (for example, the routine grading of existing dirt roads, asphalt overlays of existing roads, the routine clearing of existing right-of-ways, and similar maintenance activities.)

Linear Project – Includes the construction of roads, bridges, conduits, substructures, pipelines, sewer lines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities in a long, narrow area.

Minimize - To reduce or eliminate to the extent achievable using stormwater controls that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer System (MS4) - A separate storm sewer system owned or operated by the United States, a state, city, town, county, district, association, or other public body (created by or pursuant to state law) having jurisdiction over the disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, that discharges to surface water in the state.

Notice of Change (NOC) – Written notification to the executive director from a discharger authorized under this permit, providing changes to information that was previously provided to the agency in a notice of intent form.

Notice of Intent (NOI) - A written submission to the executive director from an applicant requesting coverage under this general permit.

Notice of Termination (NOT) - A written submission to the executive director from a discharger authorized under a general permit requesting termination of coverage.

Operator - The person or persons associated with a large or small construction activity that is either a primary or secondary operator as defined below:

Primary Operator – the person or persons associated with a large or small construction activity that meets either of the following two criteria:

(a) the person or persons have on-site operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or

(b) the person or persons have day-to-day operational control of those activities at a construction site that are necessary to ensure compliance with a Storm Water Pollution Prevention Plan (SWP3) for the site or other permit conditions (for example, they are authorized to direct workers at a site to carry out activities required by the SWP3 or comply with other permit conditions).

Secondary Operator – The person or entity, often the property owner, whose operational control is limited to:

(a) the employment of other operators, such as a general contractor, to perform or supervise construction activities; or

(b) the ability to approve or disapprove changes to construction plans and specifications, but who does not have day-to-day on-site operational control over construction activities at the site.

Secondary operators must either prepare their own SWP3 or participate in a shared SWP3 that covers the areas of the construction site where they have control over the plans and specifications.

If there is not a primary operator at the construction site, then the secondary operator is defined as the primary operator and must comply with the requirements for primary operators.

Outfall - For the purpose of this permit, a point source at the point where stormwater runoff associated with construction activity discharges to surface water in the state and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels, or other conveyances that connect segments of the same stream or other water of the U.S. and are used to convey waters of the U.S.

Permittee - An operator authorized under this general permit. The authorization may be gained through submission of a notice of intent, by waiver, or by meeting the requirements for automatic coverage to discharge stormwater runoff and certain non-stormwater discharges.

Point Source – (from 40 CFR §122.2) Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are, or may be, discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Pollutant - Dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, filter backwash, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into any surface water in the state. The term "pollutant" does not include tail water or runoff water from irrigation or rainwater runoff from cultivated or uncultivated rangeland, pastureland, and farmland. For the purpose of this permit, the term "pollutant" includes sediment.

Pollution - (from Texas Water Code (TWC) §26.001(14)) The alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any surface water in the state that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.

Rainfall Erosivity Factor (R factor) - the total annual erosive potential that is due to climatic effects, and is part of the Revised Universal Soil Loss Equation (RUSLE).

Receiving Water - A "Water of the United States" as defined in 40 CFR §122.2 into which the regulated stormwater discharges.

Semiarid Areas - areas with an average annual rainfall of 10 to 20 inches

Separate Storm Sewer System - A conveyance or system of conveyances (including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains), designed or used for collecting or conveying stormwater; that is not a combined sewer, and that is not part of a publicly owned treatment works (POTW).

Small Construction Activity - Construction activities including clearing, grading, and excavating that result in land disturbance of equal to or greater than one (1) acre and less than five (5) acres of land. Small construction activity also includes the disturbance of less than one (1) acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than one (1) and less than five (5) acres of land. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site (for example, the routine grading of existing dirt roads, asphalt overlays of existing roads, the routine clearing of existing right-of-ways, and similar maintenance activities.)

Steep Slopes – Where a state, Tribe, local government, or industry technical manual (e.g. stormwater BMP manual) has defined what is to be considered a "steep slope", this permit's definition automatically adopts that definition. Where no such definition exists, steep slopes are automatically defined as those that are 15 percent or greater in grade.

Stormwater (or Stormwater Runoff) - Rainfall runoff, snow melt runoff, and surface runoff and drainage.

Stormwater Associated with Construction Activity - Stormwater runoff from a construction activity where soil disturbing activities (including clearing, grading, excavating) result in the disturbance of one (1) or more acres of total land area, or are part of a larger common plan of development or sale that will result in disturbance of one (1) or more acres of total land area.

Structural Control (or Practice) - A pollution prevention practice that requires the construction of a device, or the use of a device, to reduce or prevent pollution in stormwater

runoff. Structural controls and practices may include but are not limited to: silt fences, earthen dikes, drainage swales, sediment traps, check dams, subsurface drains, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins.

Surface Water in the State - Lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, wetlands, marshes, inlets, canals, the Gulf of Mexico inside the territorial limits of the state (from the mean high water mark (MHWM) out 10.36 miles into the Gulf), and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including the beds and banks of all water-courses and bodies of surface water, that are wholly or partially inside or bordering the state or subject to the jurisdiction of the state; except that waters in treatment systems which are authorized by state or federal law, regulation, or permit, and which are created for the purpose of waste treatment are not considered to be water in the state.

Temporary Stabilization - A condition where exposed soils or disturbed areas are provided a protective cover or other structural control to prevent the migration of pollutants. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either permanent stabilization can be achieved or until further construction activities take place.

Total Maximum Daily Load (TMDL) - The total amount of a pollutant that a water body can assimilate and still meet the Texas Surface Water Quality Standards.

Turbidity – A condition of water quality characterized by the presence of suspended solids and/or organic material.

Waters of the United States - (from 40 CFR §122.2) Waters of the United States or waters of the U.S. means:

(a) all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) all interstate waters, including interstate wetlands;

(c) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds that the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

(1) which are or could be used by interstate or foreign travelers for recreational or other purposes;

(2) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(3) which are used or could be used for industrial purposes by industries in interstate commerce;

(d) all impoundments of waters otherwise defined as waters of the United States under this definition;

(e) tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) the territorial sea; and

(g) wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the U.S. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the U.S. (such as

disposal area in wetlands) nor resulted from the impoundment of waters of the U.S. Waters of the U.S. do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with EPA.

Part II. Permit Applicability and Coverage

Section A. Discharges Eligible for Authorization

1. Stormwater Associated with Construction Activity

Discharges of stormwater runoff from small and large construction activities may be authorized under this general permit.

2. Discharges of Stormwater Associated with Construction Support Activities

Examples of construction support activities include, but are not limited to, concrete batch plants, rock crushers, asphalt batch plants, equipment staging areas, material storage yards, material borrow areas, and excavated material disposal areas. Construction support activities authorized under this general permit are not commercial operations, and do not serve multiple unrelated construction projects. Discharges of stormwater runoff from construction support activities may be authorized under this general permit, provided that the following conditions are met:

(a) the activities are located within one (1) mile from the boundary of the permitted construction site and directly support the construction activity;

(b) an SWP3 is developed for the permitted construction site according to the provisions of this general permit, and includes appropriate controls and measures to reduce erosion and discharge of pollutants in stormwater runoff from the construction support activities; and

(c) the construction support activities either do not operate beyond the completion date of the construction activity or, at the time that they do, are authorized under separate Texas Pollutant Discharge Elimination System (TPDES) authorization. Separate TPDES authorization may include the TPDES Multi Sector General Permit (MSGP), TXR050000 (related to stormwater discharges associated with industrial activity), separate authorization under this general permit if applicable, coverage under an alternative general permit if available, or authorization under an individual water quality permit.

3. Non-Stormwater Discharges

The following non-stormwater discharges from sites authorized under this general permit are also eligible for authorization under this general permit:

(a) discharges from fire fighting activities (fire fighting activities do not include washing of trucks, run-off water from training activities, test water from fire suppression systems, or similar activities);

(b) uncontaminated fire hydrant flushings (excluding discharges of hyperchlorinated water, unless the water is first dechlorinated and discharges are not expected to adversely affect aquatic life), which include flushings from systems that utilize potable water, surface water, or groundwater that does not contain additional pollutants (uncontaminated fire hydrant flushings do not include systems utilizing reclaimed wastewater as a source water);

(c) water from the routine external washing of vehicles, the external portion of buildings or structures, and pavement, where detergents and soaps are not used, where spills or leaks of toxic or hazardous materials have not occurred (unless spilled materials

have been removed; and if local state, or federal regulations are applicable, the materials are removed according to those regulations), and where the purpose is to remove mud, dirt, or dust;

(d) uncontaminated water used to control dust;

(e) potable water sources, including waterline flushings, but excluding discharges of hyperchlorinated water, unless the water is first dechlorinated and discharges are not expected to adversely affect aquatic life;

(f) uncontaminated air conditioning condensate;

(g) uncontaminated ground water or spring water, including foundation or footing drains where flows are not contaminated with industrial materials such as solvents; and

(h) lawn watering and similar irrigation drainage.

4. Other Permitted Discharges

Any discharge authorized under a separate National Pollutant Discharge Elimination System (NPDES), TPDES, or TCEQ permit may be combined with discharges authorized by this general permit, provided those discharges comply with the associated permit.

Section B. Concrete Truck Wash Out

The wash out of concrete trucks at regulated construction sites must be performed in accordance with the requirements of Part V of this general permit.

Section C. Limitations on Permit Coverage

1. Post Construction Discharges

Discharges that occur after construction activities have been completed, and after the construction site and any supporting activity site have undergone final stabilization, are not eligible for coverage under this general permit. Discharges originating from the sites are not authorized under this general permit following the submission of the notice of termination (NOT) or removal of the appropriate site notice, as applicable, for the regulated construction activity.

2. Prohibition of Non-Stormwater Discharges

Except as otherwise provided in Part II.A. of this general permit, only discharges that are composed entirely of stormwater associated with construction activity may be authorized under this general permit.

3. Compliance With Water Quality Standards

Discharges to surface water in the state that would cause, have the reasonable potential to cause, or contribute to a violation of water quality standards or that would fail to protect and maintain existing designated uses are not eligible for coverage under this general permit. The executive director may require an application for an individual permit or alternative general permit (see Parts II.H.2. and 3.) to authorize discharges to surface water in the state if the executive director determines that any activity will cause, has the reasonable potential to cause, or contribute to a violation of water quality standards or is found to cause, has the reasonable potential to cause, or contribute to, the impairment of a designated use. The executive director may also require an application for an individual permit considering factors described in Part II.H.2. of this general permit.

4. Impaired Receiving Waters and Total Maximum Daily Load (TMDL) Requirements

New sources or new discharges of the pollutants of concern to impaired waters are not authorized by this permit unless otherwise allowable under 30 TAC Chapter 305 and applicable state law. Impaired waters are those that do not meet applicable water quality standards and are listed on the EPA approved CWA §303(d) List. Pollutants of concern are those for which the water body is listed as impaired.

Discharges of the pollutants of concern to impaired water bodies for which there is a TMDL are not eligible for this general permit unless they are consistent with the approved TMDL. Permittees must incorporate the conditions and requirements applicable to their discharges into their SWP3, in order to be eligible for coverage under this general permit. For consistency with the construction stormwater-related items in an approved TMDL, the SWP3 must be consistent with any applicable condition, goal, or requirement in the TMDL, TMDL Implementation Plan (I-Plan), or as otherwise directed by the executive director.

5. Discharges to the Edwards Aquifer Recharge or Contributing Zone

Discharges cannot be authorized by this general permit where prohibited by 30 TAC Chapter 213 (relating to Edwards Aquifer). In addition, commencement of construction (i.e., the initial disturbance of soils associated with clearing, grading, or excavating activities, as well as other construction-related activities such as stockpiling of fill material and demolition) at a site regulated under 30 TAC Chapter 213, may not begin until the appropriate Edwards Aquifer Protection Plan (EAPP) has been approved by the TCEQ's Edwards Aquifer Protection Program.

(a) For new discharges located within the Edwards Aquifer Recharge Zone, or within that area upstream from the recharge zone and defined as the Contributing Zone (CZ), operators must meet all applicable requirements of, and operate according to, 30 TAC Chapter 213 (Edwards Aquifer Rule) in addition to the provisions and requirements of this general permit.

(b) For existing discharges located within the Edwards Aquifer Recharge Zone, the requirements of the agency-approved Water Pollution Abatement Plan (WPAP) under the Edwards Aquifer Rule is in addition to the requirements of this general permit. BMPs and maintenance schedules for structural stormwater controls, for example, may be required as a provision of the rule. All applicable requirements of the Edwards Aquifer Rule for reductions of suspended solids in stormwater runoff are in addition to the requirements in this general permit for this pollutant.

6. Discharges to Specific Watersheds and Water Quality Areas

Discharges otherwise eligible for coverage cannot be authorized by this general permit where prohibited by 30 TAC Chapter 311 (relating to Watershed Protection) for water quality areas and watersheds.

7. Protection of Streams and Watersheds by Other Governmental Entities

This general permit does not limit the authority or ability of federal, other state, or local governmental entities from placing additional or more stringent requirements on construction activities or discharges from construction activities. For example, this permit does not limit the authority of a home-rule municipality provided by Texas Local Government Code §401.002.

8. Indian Country Lands

Stormwater runoff from construction activities occurring on Indian Country lands are not under the authority of the TCEQ and are not eligible for coverage under this general permit. If discharges of stormwater require authorization under federal NPDES

regulations, authority for these discharges must be obtained from the U.S. Environmental Protection Agency (EPA).

9. Oil and Gas Production

Stormwater runoff from construction activities associated with the exploration, development, or production of oil or gas or geothermal resources, including transportation of crude oil or natural gas by pipeline, are not under the authority of the TCEQ and are not eligible for coverage under this general permit. If discharges of stormwater require authorization under federal NPDES regulations, authority for these discharges must be obtained from the EPA.

10. Stormwater Discharges from Agricultural Activities

Stormwater discharges from agricultural activities that are not point source discharges of stormwater are not subject to TPDES permit requirements. These activities may include clearing and cultivating ground for crops, construction of fences to contain livestock, construction of stock ponds, and other similar agricultural activities. Discharges of stormwater runoff associated with the construction of facilities that are subject to TPDES regulations, such as the construction of concentrated animal feeding operations, would be point sources regulated under this general permit.

11. Endangered Species Act

Discharges that would adversely affect a listed endangered or threatened aquatic or aquatic-dependent species or its critical habitat are not authorized by this permit, unless the requirements of the Endangered Species Act are satisfied. Federal requirements related to endangered species apply to all TPDES permitted discharges and site-specific controls may be required to ensure that protection of endangered or threatened species is achieved. If a permittee has concerns over potential impacts to listed species, the permittee may contact TCEQ for additional information.

12. Other

Nothing in Part II of the general permit is intended to negate any person's ability to assert the force majeure (act of God, war, strike, riot, or other catastrophe) defenses found in 30 TAC §70.7.

Section D. Deadlines for Obtaining Authorization to Discharge

1. Large Construction Activities

(a) New Construction - Discharges from sites where the commencement of construction occurs on or after the effective date of this general permit must be authorized, either under this general permit or a separate TPDES permit, prior to the commencement of those construction activities.

(b) Ongoing Construction - Operators of large construction activities continuing to operate after the effective date of this permit, and authorized under TPDES general permit TXR150000 (effective on March 5, 2008), must submit an NOI to renew authorization or a NOT to terminate coverage under this general permit within 90 days of the effective date of this general permit. During this interim period, as a requirement of this TPDES permit, the operator must continue to meet the conditions and requirements of the previous TPDES permit.

2. Small Construction Activities

(a) New Construction - Discharges from sites where the commencement of construction occurs on or after the effective date of this general permit must be authorized, either

under this general permit or a separate TPDES permit, prior to the commencement of those construction activities.

(b) Ongoing Construction - Discharges from ongoing small construction activities that commenced prior to the effective date of this general permit, and that would not meet the conditions to qualify for termination of this permit as described in Part II.E. of this general permit, must meet the requirements to be authorized, either under this general permit or a separate TPDES permit, within 90 days of the effective date of this general permit. During this interim period, as a requirement of this TPDES permit, the operator must continue to meet the conditions and requirements of the previous TPDES permit.

Section E. Obtaining Authorization to Discharge

1. Automatic Authorization for Small Construction Activities With Low Potential for Erosion:

If all of the following conditions are met, then a small construction activity is determined to occur during periods of low potential for erosion, and a site operator may be automatically authorized under this general permit without being required to develop an SWP3 or submit an NOI:

(a) the construction activity occurs in a county listed in Appendix A;

(b) the construction activity is initiated and completed, including either final or temporary stabilization of all disturbed areas, within the time frame identified in Appendix A for the location of the construction site;

(c) all temporary stabilization is adequately maintained to effectively reduce or prohibit erosion, permanent stabilization activities have been initiated, and a condition of final stabilization is completed no later than 30 days following the end date of the time frame identified in Appendix A for the location of the construction site;

(d) the permittee signs a completed TCEQ construction site notice, including the certification statement;

(e) a signed copy of the construction site notice is posted at the construction site in a location where it is readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction activities, and maintained in that location until completion of the construction activity;

(f) a copy of the signed and certified construction site notice is provided to the operator of any MS4 receiving the discharge at least two days prior to commencement of construction activities;

(g) any supporting concrete batch plant or asphalt batch plant is separately authorized for discharges of stormwater runoff or other non-stormwater discharges under an individual TPDES permit, another TPDES general permit, or under an individual TCEQ permit where stormwater and non-stormwater is disposed of by evaporation or irrigation (discharges are adjacent to water in the state); and

(h) any non-stormwater discharges are either authorized under a separate permit or authorization, or are not considered to be a wastewater.

Part II.G. of this general permit describes how an operator may apply for and obtain a waiver from permitting, for certain small construction activities that occur during a period with a low potential for erosion, where automatic authorization under this section is not available.

2. Automatic Authorization For All Other Small Construction Activities:

Operators of small construction activities not described in Part II.E.1. above may be automatically authorized under this general permit, and operators of these sites shall not be required to submit an NOI, provided that they meet all of the following conditions:

(a) develop a SWP3 according to the provisions of this general permit, that covers either the entire site or all portions of the site for which the applicant is the operator, and implement that plan prior to commencing construction activities;

(b) sign and certify a completed TCEQ small construction site notice, post the notice at the construction site in a location where it is safely and readily available for viewing by the general public, local, state, and federal authorities, prior to commencing construction, and maintain the notice in that location until completion of the construction activity (for linear construction activities, e.g. pipeline or highway, the site notice must be placed in a publicly accessible location near where construction is actively underway; notice for these linear sites may be relocated, as necessary, along the length of the project, and the notice must be safely and readily available for viewing by the general public; local, state, and federal authorities); and

(c) provide a copy of the signed and certified construction site notice to the operator of any municipal separate storm sewer system receiving the discharge prior to commencement of construction activities.

Operators of small construction activities as defined in Part I.B of this general permit shall not submit an NOI for coverage unless otherwise required by the executive director.

As described in Part I (Definitions) of this general permit, large construction activities include those that will disturb less than five (5) acres of land, but that are part of a larger common plan of development or sale that will ultimately disturb five (5) or more acres of land, and must meet the requirements of Part II.E.3. below.

3. Authorization for Large Construction Activities:

Operators of large construction activities that qualify for coverage under this general permit must meet all of the following conditions:

(a) develop a SWP3 according to the provisions of this general permit that covers either the entire site or all portions of the site for which the applicant is the operator, and implement that plan prior to commencing construction activities;

(b) primary operators must submit an NOI, using a form provided by the executive director, at least seven (7) days prior to commencing construction activities, or if utilizing electronic submittal, prior to commencing construction activities. If an additional primary operator is added after the initial NOI is submitted, the new primary operator must submit an NOI at least seven (7) days before assuming operational control, or if utilizing electronic NOI submittal, prior to assuming operational control. If the primary operator changes after the initial NOI is submitted, the new primary operator must submit a paper NOI or an electronic NOI at least ten (10) days before assuming operational control;

(c) all operators of large construction activities must post a site notice in accordance with Part III.D.2. of this permit. The site notice must be located where it is safely and readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction, and must be maintained in that location until completion of the construction activity (for linear construction activities, e.g. pipeline or highway, the site notice must be placed in a publicly accessible location near where construction is actively underway; notice for these linear sites may be relocated, as necessary, along the length of the project, and the notice must be safely and readily available for viewing by the general public; local, state, and federal authorities);

(d) prior to commencing construction activities, all primary operators must (1) provide a copy of the signed NOI to the operator of any MS4 receiving the discharge and to any secondary construction operator, and (2) list in the SWP3 the names and addresses of all MS4 operators receiving a copy;

(e) all persons meeting the definition of "secondary operator" in Part I of this permit are hereby notified that they are regulated under this general permit, but are not required to submit an NOI, provided that a primary operator at the site has submitted an NOI, or is required to submit an NOI, and the secondary operator has provided notification to the operator(s) of the need to obtain coverage (with records of notification available upon request). Any secondary operator notified under this provision may alternatively submit an NOI under this general permit, may seek coverage under an alternative TPDES individual permit, or may seek coverage under an alternative TPDES general permit if available; and

(f) all secondary operators must provide a copy of the signed and certified Secondary Operator construction site notice to the operator of any MS4 receiving the discharge prior to commencement of construction activities.

4. Waivers for Small Construction Activities:

Part II.G. describes how operators of certain small construction activities may obtain a waiver from coverage.

5. Effective Date of Coverage

(a) Operators of small construction activities as described in either Part II.E.1. or II.E.2. above are authorized immediately following compliance with the applicable conditions of Part II.E.1. or II.E.2. Secondary operators of large construction activities as described in Part II.E.3. above are authorized immediately following compliance with the applicable conditions in Part II.E.3. For activities located in areas regulated by 30 TAC Chapter 213, related to the Edwards Aquifer, this authorization to discharge is separate from the requirements of the operator's responsibilities under that rule. Construction may not commence for sites regulated under 30 TAC Chapter 213 until all applicable requirements of that rule are met.

(b) Primary operators of large construction activities as described in Part II.E.3. above are provisionally authorized seven (7) days from the date that a completed NOI is postmarked for delivery to the TCEQ, unless otherwise notified by the executive director. If electronic submission of the NOI is provided, and unless otherwise notified by the executive director, primary operators are authorized immediately following confirmation of receipt of the NOI by the TCEQ. Authorization is non-provisional when the executive director finds the NOI is administratively complete and an authorization number is issued for the activity. For activities located in areas regulated by 30 TAC Chapter 213, related to the Edwards Aquifer, this authorization to discharge is separate from the requirements of the operator's responsibilities under that rule. Construction may not commence for sites regulated under 30 TAC Chapter 213 until all applicable requirements of that rule are met.

(c) Operators are not prohibited from submitting late NOIs or posting late notices to obtain authorization under this general permit. The TCEQ reserves the right to take appropriate enforcement actions for any unpermitted activities that may have occurred between the time construction commenced and authorization was obtained.

6. Notice of Change (NOC)

If relevant information provided in the NOI changes, an NOC must be submitted at least 14 days before the change occurs, if possible. Where 14-day advance notice is not possible, the operator must submit an NOC within 14 days of discovery of the change. If

the operator becomes aware that it failed to submit any relevant facts or submitted incorrect information in an NOI, the correct information must be provided to the executive director in an NOC within 14 days after discovery. The NOC shall be submitted on a form provided by the executive director, or by letter if an NOC form is not available. A copy of the NOC must also be provided to the operator of any MS4 receiving the discharge, and a list must be included in the SWP3 that includes the names and addresses of all MS4 operators receiving a copy.

Information that may be included on an NOC includes, but is not limited to, the following: the description of the construction project, an increase in the number of acres disturbed (for increases of one or more acres), or the operator name. A transfer of operational control from one operator to another, including a transfer of the ownership of a company, may not be included in an NOC.

A transfer of ownership of a company includes changes to the structure of a company, such as changing from a partnership to a corporation or changing corporation types, so that the filing number (or charter number) that is on record with the Texas Secretary of State must be changed.

An NOC is not required for notifying TCEQ of a decrease in the number of acres disturbed. This information must be included in the SWP3 and retained on site.

7. Signatory Requirement for NOI Forms, Notice of Termination (NOT) Forms, NOC Letters, and Construction Site Notices

NOI forms, NOT forms, NOC letters, and Construction Site Notices that require a signature must be signed according to 30 TAC § 305.44 (relating to Signatories for Applications).

8. Contents of the NOI

The NOI form shall require, at a minimum, the following information:

(a) the TPDES CGP authorization number for existing authorizations under this general permit, where the operator submits an NOI to renew coverage within 90 days of the effective date of this general permit;

(b) the name, address, and telephone number of the operator filing the NOI for permit coverage;

(c) the name (or other identifier), address, county, and latitude/longitude of the construction project or site;

(d) the number of acres that will be disturbed by the applicant;

(e) confirmation that the project or site will not be located on Indian Country lands;

(f) confirmation that a SWP3 has been developed in accordance with this general permit, that it will be implemented prior to construction, and that it is compliant with any applicable local sediment and erosion control plans; for multiple operators who prepare a shared SWP3, the confirmation for an operator may be limited to its obligations under the SWP3 provided all obligations are confirmed by at least one operator;

(g) name of the receiving water(s);

(h) the classified segment number for each classified segment that receives discharges from the regulated construction activity (if the discharge is not directly to a classified segment, then the classified segment number of the first classified segment that those discharges reach); and

(i) the name of all surface waters receiving discharges from the regulated construction activity that are on the latest EPA-approved CWA § 303(d) List of impaired waters.

Section F. Terminating Coverage

1. Notice of Termination (NOT) Required

Each operator that has submitted an NOI for authorization under this general permit must apply to terminate that authorization following the conditions described in this section of the general permit. Authorization must be terminated by submitting an NOT on a form supplied by the executive director. Authorization to discharge under this general permit terminates at midnight on the day the NOT is postmarked for delivery to the TCEQ. If electronic submission of the NOT is provided, authorization to discharge under this permit terminates immediately following confirmation of receipt of the NOT by the TCEQ. Compliance with the conditions and requirements of this permit is required until an NOT is submitted.

The NOT must be submitted to TCEQ, and a copy of the NOT provided to the operator of any MS4 receiving the discharge (with a list in the SWP3 of the names and addresses of all MS4 operators receiving a copy), within 30 days after any of the following conditions are met:

(a) final stabilization has been achieved on all portions of the site that are the responsibility of the permittee;

(b) a transfer of operational control has occurred (See Section II.F.4. below); or

(c) the operator has obtained alternative authorization under an individual TPDES permit or alternative TPDES general permit.

2. Minimum Contents of the NOT

The NOT form shall require, at a minimum, the following information:

(a) if authorization was granted following submission of an NOI, the permittee's site-specific TPDES authorization number for the construction site;

(b) an indication of whether the construction activity is completed or if the permittee is simply no longer an operator at the site;

(c) the name, address, and telephone number of the permittee submitting the NOT;

(d) the name (or other identifier), address, county, and location (latitude/longitude) of the construction project or site; and

(e) a signed certification that either all stormwater discharges requiring authorization under this general permit will no longer occur, or that the applicant is no longer the operator of the facility or construction site, and that all temporary structural erosion controls have either been removed, will be removed on a schedule defined in the SWP3, or have been transferred to a new operator if the new operator has applied for permit coverage. Erosion controls that are designed to remain in place for an indefinite period, such as mulches and fiber mats, are not required to be removed or scheduled for removal.

3. Termination of Coverage for Small Construction Sites and for Secondary Operators at Large Construction Sites

Each operator that has obtained automatic authorization and has not been required to submit an NOI must remove the site notice upon meeting any of the conditions listed below, complete the applicable portion of the site notice related to removal of the site notice, and submit a copy of the completed site notice to the operator of any MS4 receiving the discharge (or provide alternative notification as allowed by the MS4 operator, with documentation of such notification included in the SWP3), within 30 days of meeting any of the following conditions:

(a) final stabilization has been achieved on all portions of the site that are the responsibility of the permittee;

(b) a transfer of operational control has occurred (See Section II.F.4. below); or

(c) the operator has obtained alternative authorization under an individual or general TPDES permit.

Authorization to discharge under this general permit terminates immediately upon removal of the applicable site notice. Compliance with the conditions and requirements of this permit is required until the site notice is removed.

4. Transfer of Operational Control

Coverage under this general permit is not transferable. A transfer of operational control includes changes to the structure of a company, such as changing from a partnership to a corporation, or changing to a different corporation type such that a different filing (or charter) number is established with the Texas Secretary of State.

When the primary operator of a large construction activity changes or operational control is transferred, the original operator must submit an NOT within ten (10) days prior to the date that responsibility for operations terminates, and the new operator must submit an NOI at least ten (10) days prior to the transfer of operational control, in accordance with condition (a) or (b) below. A copy of the NOT must be provided to the operator of any MS4 receiving the discharge in accordance with Section II.F.1. above.

Operators of regulated construction activities who are not required to submit an NOI must remove the original site notice, and the new operator must post the required site notice prior to the transfer of operational control, in accordance with condition (a) or (b) below. A copy of the completed site notice must be provided to the operator of any MS4 receiving the discharge, in accordance with Section II.F.3. above.

A transfer of operational control occurs when either of the following criteria is met:

(a) Another operator has assumed control over all areas of the site that have not been finally stabilized; and all silt fences and other temporary erosion controls have either been removed, scheduled for removal as defined in the SWP3, or transferred to a new operator, provided that the permitted operator has attempted to notify the new operator in writing of the requirement to obtain permit coverage. Record of this notification (or attempt at notification) shall be retained by the operator in accordance with Part VI of this permit. Erosion controls that are designed to remain in place for an indefinite period, such as mulches and fiber mats, are not required to be removed or scheduled for removal.

(b) A homebuilder has purchased one or more lots from an operator who obtained coverage under this general permit for a common plan of development or sale. The homebuilder is considered a new operator and shall comply with the requirements listed above, including the development of a SWP3 if necessary. Under these circumstances, the homebuilder is only responsible for compliance with the general permit requirements as they apply to lot(s) it has operational control over, and the original operator remains responsible for common controls or discharges, and must amend its SWP3 to remove the lot(s) transferred to the homebuilder.

Section G. Waivers from Coverage

The executive director may waive the otherwise applicable requirements of this general permit for stormwater discharges from small construction activities under the terms and conditions described in this section.

1. Waiver Applicability and Coverage

Operators of small construction activities may apply for and receive a waiver from the requirements to obtain authorization under this general permit, where all of the following conditions are met. This waiver from coverage does not apply to non-stormwater discharges. The operator must insure that any non-stormwater discharges are either authorized under a separate permit or authorization, or are not considered to be a wastewater.

(a) the calculated rainfall erosivity (R) factor for the entire period of the construction project is less than five (5);

(b) the operator submits to the TCEQ a signed waiver certification form, supplied by the executive director, certifying that the construction activity will commence and be completed within a period when the value of the calculated R factor is less than five (5); and

(c) the waiver certification form is postmarked for delivery to the TCEQ at least seven (7) days before construction activity begins or, if electronic filing is available, then any time following the receipt of written confirmation from TCEQ that a complete electronic application was submitted and acknowledged.

2. Steps to Obtaining a Waiver

The construction site operator may calculate the R factor to request a waiver using the following steps:

(a) Estimate the construction start date and the construction end date. The construction end date is the date that final stabilization will be achieved.

(b) Find the appropriate Erosivity Index (EI) zone in Appendix B of this permit.

(c) Find the EI percentage for the project period by adding the results for each period of the project using the table provided in Appendix D of this permit, in EPA Fact Sheet 2.1, or in USDA Handbook 703, by subtracting the start value from the end value to find the percent EI for the site.

(d) Refer to the Isoerodent Map (Appendix C of this permit) and interpolate the annual isoerodent value for the proposed construction location.

(e) Multiply the percent value obtained in Step (c) above by the annual isoerodent value obtained in Step (d). This is the R factor for the proposed project. If the value is less than 5, then a waiver may be obtained. If the value is five (5) or more, then a waiver may not be obtained, and the operator must obtain coverage under Part II.E.2. of this permit.

Alternatively, the operator may calculate a site-specific R factor utilizing the following online calculator: http://ei.tamu.edu/index.html, or using another available resource.

The waiver certification form is not required to be posted at the small construction site.

3. Effective Date of Waiver

Operators of small construction activities are provisionally waived from the otherwise applicable requirements of this general permit seven (7) days from the date that a completed waiver certification form is postmarked for delivery to TCEQ, or immediately upon receiving confirmation of approval of an electronic submittal, if electronic form submittals are available.

4. Activities Extending Beyond the Waiver Period

If a construction activity extends beyond the approved waiver period due to circumstances beyond the control of the operator, the operator must either:

(a) recalculate the R factor using the original start date and a new projected ending date, and if the R factor is still under five (5), submit a new waiver certification form at least two (2) days before the end of the original waiver period; or

(b) obtain authorization under this general permit according to the requirements delineated in either Part II.E.2. or Part II.E.3. before the end of the approved waiver period.

Section H. Alternative TPDES Permit Coverage

1. Individual Permit Alternative

Any discharge eligible for coverage under this general permit may alternatively be authorized under an individual TPDES permit according to 30 TAC §305 (relating to Consolidated Permits). Applications for individual permit coverage should be submitted at least three hundred and thirty (330) days prior to commencement of construction activities to ensure timely authorization.

2. Individual Permit Required

The executive director may suspend an authorization or deny an NOI in accordance with the procedures set forth in 30 TAC §205 (relating to General Permits for Waste Discharges), including the requirement that the executive director provide written notice to the permittee. The executive director may require an operator of a construction site, otherwise eligible for authorization under this general permit, to apply for an individual TPDES permit in the following circumstances:

(a) the conditions of an approved TMDL or TMDL I-Plan on the receiving water;

(b) the activity being determined to cause a violation of water quality standards or being found to cause, or contribute to, the loss of a designated use of surface water in the state: and

(c) any other consideration defined in 30 TAC Chapter 205 (relating to General Permits for Waste Discharges) including 30 TAC Chapter 205.4(c)(3)(D), which allows the commission to deny authorization under the general permit and require an individual permit if a discharger "has been determined by the executive director to have been out of compliance with any rule, order, or permit of the commission, including non-payment of fees assessed by the executive director."

Additionally, the executive director may cancel, revoke, or suspend authorization to discharge under this general permit based on a finding of historical and significant noncompliance with the provisions of this general permit, relating to 30 TAC §60.3 (Use of Compliance History). Denial of authorization to discharge under this general permit or suspension of a permittee's authorization under this general permit shall be done according to commission rules in 30 TAC Chapter 205 (relating to General Permits for Waste Discharges).

3. Alternative Discharge Authorization

Any discharge eligible for authorization under this general permit may alternatively be authorized under a separate general permit according to 30 TAC Chapter 205 (relating to General Permits for Waste Discharges), if applicable.

Section I. Permit Expiration

1. This general permit is effective for a term not to exceed five (5) years. All active discharge authorizations expire on the date provided on page one (1) of this permit. Following public notice and comment, as provided by 30 TAC §205.3 (relating to

Public Notice, Public Meetings, and Public Comment), the commission may amend, revoke, cancel, or renew this general permit.

2. If the executive director publishes a notice of the intent to renew or amend this general permit before the expiration date, the permit will remain in effect for existing, authorized discharges until the commission takes final action on the permit. Upon issuance of a renewed or amended permit, permittees may be required to submit an NOI within 90 days following the effective date of the renewed or amended permit, unless that permit provides for an alternative method for obtaining authorization.
3. If the commission does not propose to reissue this general permit within 90 days before the expiration date, permittees shall apply for authorization under an individual permit or an alternative general permit. If the application for an individual permit is submitted before the expiration date, authorization under this expiring general permit remains in effect until the issuance or denial of an individual permit. No new NOIs will be accepted nor new authorizations honored under the general permit after the expiration date.

Part III. Stormwater Pollution Prevention Plans (SWP3)

All regulated construction site operators shall prepare an SWP3, prior to submittal of an NOI, to address discharges authorized under Parts II.E.2. and II.E.3. of this general permit that will reach Waters of the U.S., including discharges to MS4s and privately owned separate storm sewer systems that drain to Waters of the U.S., to identify and address potential sources of pollution that are reasonably expected to affect the quality of discharges from the construction site, including off-site material storage areas, overburden and stockpiles of dirt, borrow areas, equipment staging areas, vehicle repair areas, fueling areas, etc., used solely by the permitted project. The SWP3 must describe the implementation of practices that will be used to minimize to the extent practicable the discharge of pollutants in stormwater associated with construction activity and non-stormwater discharges described in Part II.A.3., in compliance with the terms and conditions of this permit.

Individual operators at a site may develop separate SWP3s that cover only their portion of the project, provided reference is made to the other operators at the site. Where there is more than one SWP3 for a site, permittees must coordinate to ensure that BMPs and controls are consistent and do not negate or impair the effectiveness of each other. Regardless of whether a single comprehensive SWP3 is developed or separate SWP3s are developed for each operator, it is the responsibility of each operator to ensure compliance with the terms and conditions of this general permit in the areas of the construction site where that operator has control over construction plans and specifications or day-to-day operations.

Section A. Shared SWP3 Development

For more effective coordination of BMPs and opportunities for cost sharing, a cooperative effort by the different operators at a site is encouraged. Operators must independently obtain authorization, but may work together to prepare and implement a single, comprehensive SWP3 for the entire construction site.

1. The SWP3 must clearly list the name and, for large construction activities, the general permit authorization numbers, for each operator that participates in the shared SWP3. Until the TCEQ responds to receipt of the NOI with a general permit authorization number, the SWP3 must specify the date that the NOI was submitted to TCEQ by each operator. Each operator participating in the shared plan must also sign the SWP3.

2. The SWP3 must clearly indicate which operator is responsible for satisfying each shared requirement of the SWP3. If the responsibility for satisfying a requirement is not described in the plan, then each permittee is entirely responsible for meeting the requirement within the boundaries of the construction site where they perform construction activities. The SWP3 must clearly describe responsibilities for meeting each requirement in shared or common areas.
3. The SWP3 may provide that one operator is responsible for preparation of a SWP3 in compliance with the CGP, and another operator is responsible for implementation of the SWP3 at the project site.

Section B. Responsibilities of Operators

1. Secondary Operators and Primary Operators with Control Over Construction Plans and Specifications

All secondary operators and primary operators with control over construction plans and specifications shall:

(a) ensure the project specifications allow or provide that adequate BMPs are developed to meet the requirements of Part III of this general permit;

(b) ensure that the SWP3 indicates the areas of the project where they have control over project specifications, including the ability to make modifications in specifications;

(c) ensure that all other operators affected by modifications in project specifications are notified in a timely manner so that those operators may modify their BMP s as necessary to remain compliant with the conditions of this general permit; and

(d) ensure that the SWP3 for portions of the project where they are operators indicates the name and site-specific TPDES authorization number(s) for operators with the day-to-day operational control over those activities necessary to ensure compliance with the SWP3 and other permit conditions. If the party with day-to-day operational control has not been authorized or has abandoned the site, the person with control over project specifications is considered to be the responsible party until the authority is transferred to another party and the SWP3 is updated.

2. Primary Operators with Day-to-Day Operational Control

Primary operators with day-to-day operational control of those activities at a project that are necessary to ensure compliance with an SWP3 and other permit conditions must ensure that the SWP3 accomplishes the following requirements:

(a) meets the requirements of this general permit for those portions of the project where they are operators;

(b) identifies the parties responsible for implementation of BMPs described in the SWP3;

(c) indicates areas of the project where they have operational control over day-to-day activities; and

(d) includes, for areas where they have operational control over day-to-day activities, the name and site-specific TPDES authorization number of the parties with control over project specifications, including the ability to make modifications in specifications.

Section C. Deadlines for SWP3 Preparation, Implementation, and Compliance

The SWP3 must be prepared prior to obtaining authorization under this general permit, and implemented prior to commencing construction activities that result in soil

disturbance. The SWP3 must be prepared so that it provides for compliance with the terms and conditions of this general permit.

Section D. Plan Review and Making Plans Available

1. The SWP3 must be retained on-site at the construction site or, if the site is inactive or does not have an on-site location to store the plan, a notice must be posted describing the location of the SWP3. The SWP3 must be made readily available at the time of an on-site inspection to: the executive director; a federal, state, or local agency approving sediment and erosion plans, grading plans, or stormwater management plans; local government officials; and the operator of a municipal separate storm sewer receiving discharges from the site. If the SWP3 is retained off-site, then it shall be made available as soon as reasonably possible. In most instances, it is reasonable that the SWP3 shall be made available within 24 hours of the request.
2. A primary operator of a large construction activity must post the TCEQ site notice near the main entrance of the construction site. An operator of a small construction activity seeking authorization under this general permit and a secondary operator of a large construction activity must post the TCEQ site notice required in Part II.E.1., 2., or 3. of this general permit in order to obtain authorization. If the construction project is a linear construction project, such as a pipeline or highway, the notices must be placed in a publicly accessible location near where construction is actively underway. Notices for these linear sites may be relocated, as necessary, along the length of the project. The notices must be readily available for viewing by the general public; local, state, and federal authorities; and contain the following information:
   (a) the site-specific TPDES authorization number for the project if assigned;
   (b) the operator name, contact name, and contact phone number;
   (c) a brief description of the project; and
   (d) the location of the SWP3.
3. This permit does not provide the general public with any right to trespass on a construction site for any reason, including inspection of a site; nor does this permit require that permittees allow members of the general public access to a construction site.

Section E. Revisions and Updates to SWP3s

The permittee must revise or update the SWP3 whenever the following occurs:

1. a change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants and that has not been previously addressed in the SWP3;
2. changing site conditions based on updated plans and specifications, new operators, new areas of responsibility, and changes in BMPs; or
3. results of inspections or investigations by site operators, operators of a municipal separate storm sewer system receiving the discharge, authorized TCEQ personnel, or a federal, state or local agency approving sediment and erosion plans indicate the SWP3 is proving ineffective in eliminating or significantly minimizing pollutants in discharges authorized under this general permit.

Section F. Contents of SWP3

The SWP3 must include, at a minimum, the information described in this section and must comply with the construction and development effluent guidelines in Part III, Section G of the general permit.

1. A site or project description, which includes the following information:
   (a) a description of the nature of the construction activity;
   (b) a list of potential pollutants and their sources;
   (c) a description of the intended schedule or sequence of activities that will disturb soils for major portions of the site, including estimated start dates and duration of activities;
   (d) the total number of acres of the entire property and the total number of acres where construction activities will occur, including off-site material storage areas, overburden and stockpiles of dirt, and borrow areas that are authorized under the permittee's NOI;
   (e) data describing the soil or the quality of any discharge from the site;
   (f) a map showing the general location of the site (e.g. a portion of a city or county map);
   (g) a detailed site map (or maps) indicating the following:
      (i) drainage patterns and approximate slopes anticipated after major grading activities;
      (ii) areas where soil disturbance will occur;
      (iii) locations of all controls and buffers, either planned or in place;
      (iv) locations where temporary or permanent stabilization practices are expected to be used;
      (v) locations of construction support activities, including off-site activities, that are authorized under the permittee's NOI, including material, waste, borrow, fill, or equipment or chemical storage areas;
      (vi) surface waters (including wetlands) either at, adjacent, or in close proximity to the site, and also indicating those that are impaired waters;
      (vii) locations where stormwater discharges from the site directly to a surface water body or a municipal separate storm sewer system;
      (viii) vehicle wash areas; and
      (ix) designated points on the site where vehicles will exit onto paved roads (for instance, this applies to construction transition from unstable dirt areas to exterior paved roads).

      Where the amount of information required to be included on the map would result in a single map being difficult to read and interpret, the operator shall develop a series of maps that collectively include the required information.
   (h) the location and description of support activities authorized under the permittee's NOI, including asphalt plants, concrete plants, and other activities providing support to the construction site that is authorized under this general permit;
   (i) the name of receiving waters at or near the site that may be disturbed or that may receive discharges from disturbed areas of the project;
   (j) a copy of this TPDES general permit;
   (k) the NOI and acknowledgement certificate for primary operators of large construction sites, and the site notice for small construction sites and for secondary operators of large construction sites;
   (l) stormwater and allowable non-stormwater discharge locations, including storm drain inlets on site and in the immediate vicinity of the construction site; and

(m) locations of all pollutant-generating activities, such as paving operations; concrete, paint and stucco washout and water disposal; solid waste storage and disposal; and dewatering operations.

2. A description of the BMPs that will be used to minimize pollution in runoff.

The description must identify the general timing or sequence for implementation. At a minimum, the description must include the following components:

(a) General Requirements

(i) Erosion and sediment controls must be designed to retain sediment on-site to the extent practicable with consideration for local topography, soil type, and rainfall.

(ii) Control measures must be properly selected, installed, and maintained according to the manufacturer's or designer's specifications.

(iii) Controls must be developed to minimize the offsite transport of litter, construction debris, and construction materials.

(b) Erosion Control and Stabilization Practices

The SWP3 must include a description of temporary and permanent erosion control and stabilization practices for the site, compliant with the requirements of Part III.G.1 and G.2 of this general permit, including a schedule of when the practices will be implemented. Site plans should ensure that existing vegetation is preserved where it is possible.

(i) Erosion control and stabilization practices may include but are not limited to: establishment of temporary or permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of existing trees and vegetation, slope texturing, temporary velocity dissipation devices, flow diversion mechanisms, and other similar measures.

(ii) The following records must be maintained and either attached to or referenced in the SWP3, and made readily available upon request to the parties listed in Part III.D.1 of this general permit:

(A) the dates when major grading activities occur;

(B) the dates when construction activities temporarily or permanently cease on a portion of the site; and

(C) the dates when stabilization measures are initiated.

(iii) Erosion control and stabilization measures must be initiated immediately in portions of the site where construction activities have temporarily ceased and will not resume for a period exceeding 14 calendar days. Stabilization measures that provide a protective cover must be initiated immediately in portions of the site where construction activities have permanently ceased. The term "immediately" is used to define the deadline for initiating stabilization measures. In the context of this requirement, "immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased. Except as provided in (A) through (D) below, these measures must be completed as soon as practicable, but no more than 14 calendar days after the initiation of soil stabilization measures:

(A) Where the immediate initiation of stabilization measures after construction activity temporarily or permanently ceased is precluded

by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practicable.

(B) In arid areas, semi-arid areas, or drought-stricken areas where the immediate initiation of stabilization measures after construction activity has temporarily or permanently ceased or is precluded by arid conditions, erosion control and stabilization measures must be initiated as soon as practicable. Where vegetative controls are not feasible due to arid conditions, the operator shall immediately install, and within 14 calendar days of a temporary or permanent cessation of work in any portion of the site complete, non-vegetative erosion controls. If non-vegetative controls are not feasible, the operator shall install temporary sediment controls as required in Paragraph (C) below.

(C) In areas where temporary stabilization measures are infeasible, the operator may alternatively utilize temporary perimeter controls. The operator must document in the SWP3 the reason why stabilization measures are not feasible, and must demonstrate that the perimeter controls will retain sediment on site to the extent practicable. The operator must continue to inspect the BMPs at the frequency established in Section III.F.7.(a) for unstabilized sites.

(D) If the initiation or completion of vegetative stabilization is affected by circumstances beyond the control of the permittee, vegetative stabilization must be initiated or completed as soon as conditions or circumstances allow it on the site. The requirement to initiate stabilization is triggered as soon as it is known with reasonable certainty that work will be stopped for 14 or more additional calendar days.

(iv) Final stabilization must be achieved prior to termination of permit coverage.

(v) TCEQ does not expect that temporary or permanent stabilization measures to be applied to areas that are intended to be left un-vegetated or un-stabilized following construction (e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, or materials).

(c) Sediment Control Practices

The SWP3 must include a description of any sediment control practices used to remove eroded soils from stormwater runoff, including the general timing or sequence for implementation of controls.

(i) Sites With Drainage Areas of Ten or More Acres

(A) Sedimentation Basin(s)

(1) A sedimentation basin is required, where feasible, for a common drainage location that serves an area with ten (10) or more acres disturbed at one time. A sedimentation basin may be temporary or permanent, and must provide sufficient storage to contain a calculated volume of runoff from a 2-year, 24-hour storm from each disturbed acre drained. When calculating the volume of runoff from a 2-year, 24-hour storm event, it is not required to include the flows from offsite areas and flow from onsite areas that are either undisturbed or have already undergone permanent stabilization, if these flows are diverted around both the disturbed areas of the site and the sediment basin. Capacity calculations shall be included in the SWP3.

(2) Where rainfall data is not available or a calculation cannot be performed, the sedimentation basin must provide at least 3,600 cubic feet of storage per acre drained until final stabilization of the site.

(3) If a sedimentation basin is not feasible, then the permittee shall provide equivalent control measures until final stabilization of the site. In determining whether installing a sediment basin is feasible, the permittee may consider factors such as site soils, slope, available area, public safety, precipitation patterns, site geometry, site vegetation, infiltration capacity, geotechnical factors, depth to groundwater, and other similar considerations. The permittee shall document the reason that the sediment basins are not feasible, and shall utilize equivalent control measures, which may include a series of smaller sediment basins.

(4) Unless infeasible, when discharging from sedimentation basins and impoundments, the permittee shall utilize outlet structures that withdraw water from the surface.

(B) Perimeter Controls: At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area, and for those side slope boundaries deemed appropriate as dictated by individual site conditions.

(ii) Controls for Sites With Drainage Areas Less than Ten Acres:

(A) Sediment traps and sediment basins may be used to control solids in stormwater runoff for drainage locations serving less than ten (10) acres. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area, and for those side slope boundaries deemed appropriate as dictated by individual site conditions.

(B) Alternatively, a sediment basin that provides storage for a calculated volume of runoff from a 2-year, 24-hour storm from each disturbed acre drained may be utilized. Where rainfall data is not available or a calculation cannot be performed, a temporary or permanent sediment basin providing 3,600 cubic feet of storage per acre drained may be provided. If a calculation is performed, then the calculation shall be included in the SWP3.

(C) If sedimentation basins or impoundments are used, the permittee shall comply with the requirements in Part III.G.6 of this general permit.

3. Description of Permanent Stormwater Controls

A description of any measures that will be installed during the construction process to control pollutants in stormwater discharges that may occur after construction operations have been completed must be included in the SWP3. Permittees are only responsible for the installation and maintenance of stormwater management measures prior to final stabilization of the site or prior to submission of an NOT.

4. Other Required Controls and BMPs

(a) Permittees shall minimize, to the extent practicable, the off-site vehicle tracking of sediments and the generation of dust. The SWP3 shall include a description of controls utilized to accomplish this requirement.

(b) The SWP3 must include a description of construction and waste materials expected to be stored on-site and a description of controls to minimize pollutants from these materials.

(c) The SWP3 must include a description of potential pollutant sources from areas other than construction (such as stormwater discharges from dedicated asphalt plants and dedicated concrete batch plants), and a description of controls and measures that will be implemented at those sites to minimize pollutant discharges.

(d) Permittees shall place velocity dissipation devices at discharge locations and along the length of any outfall channel (i.e., runoff conveyance) to provide a non-erosive flow velocity from the structure to a water course, so that the natural physical and biological characteristics and functions are maintained and protected.

(e) Permittees shall design and utilize appropriate controls to minimize the offsite transport of suspended sediments and other pollutants if it is necessary to pump or channel standing water from the site.

(f) Permittees shall ensure that all other required controls and BMPs comply with all of the requirements of Part III.G of this general permit.

5. Documentation of Compliance with Approved State and Local Plans

(a) Permittees must ensure that the SWP3 is consistent with requirements specified in applicable sediment and erosion site plans or site permits, or stormwater management site plans or site permits approved by federal, state, or local officials.

(b) SWP3s must be updated as necessary to remain consistent with any changes applicable to protecting surface water resources in sediment erosion site plans or site permits, or stormwater management site plans or site permits approved by state or local official for which the permittee receives written notice.

(c) If the permittee is required to prepare a separate management plan, including but not limited to a WPAP or Contributing Zone Plan in accordance with 30 TAC Chapter 213 (related to the Edwards Aquifer), then a copy of that plan must be either included in the SWP3 or made readily available upon request to authorized personnel of the TCEQ. The permittee shall maintain a copy of the approval letter for the plan in its SWP3.

6. Maintenance Requirements

(a) All protective measures identified in the SWP3 must be maintained in effective operating condition. If, through inspections or other means, the permittee determines that BMPs are not operating effectively, then the permittee shall perform maintenance as necessary to maintain the continued effectiveness of stormwater controls, and prior to the next rain event if feasible. If maintenance prior to the next anticipated storm event is impracticable, the reason shall be documented in the SWP3 and maintenance must be scheduled and accomplished as soon as practicable. Erosion and sediment controls that have been intentionally disabled, run-over, removed, or otherwise rendered ineffective must be replaced or corrected immediately upon discovery.

(b) If periodic inspections or other information indicates a control has been used incorrectly, is performing inadequately, or is damaged, then the operator shall replace or modify the control as soon as practicable after making the discovery.

(c) Sediment must be removed from sediment traps and sedimentation ponds no later than the time that design capacity has been reduced by 50%. For perimeter

controls such as silt fences, berms, etc., the trapped sediment must be removed before it reaches 50% of the above-ground height.

(d) If sediment escapes the site, accumulations must be removed at a frequency that minimizes off-site impacts, and prior to the next rain event, if feasible. If the permittee does not own or operate the off-site conveyance, then the permittee shall work with the owner or operator of the property to remove the sediment.

7. Inspections of Controls

(a) Personnel provided by the permittee must inspect disturbed areas of the construction site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, discharge locations, and structural controls for evidence of, or the potential for, pollutants entering the drainage system. Personnel conducting these inspections must be knowledgeable of this general permit, familiar with the construction site, and knowledgeable of the SWP3 for the site. Sediment and erosion control measures identified in the SWP3 must be inspected to ensure that they are operating correctly. Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking. Inspections must be conducted at least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

Where sites have been finally or temporarily stabilized or where runoff is unlikely due to winter conditions (e.g. site is covered with snow, ice, or frozen ground exists), inspections must be conducted at least once every month. In arid, semi-arid, or drought-stricken areas, inspections must be conducted at least once every month and within 24 hours after the end of a storm event of 0.5 inches or greater. The SWP3 must also contain a record of the total rainfall measured, as well as the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections.

As an alternative to the above-described inspection schedule of once every 14 calendar days and within 24 hours of a storm event of 0.5 inches or greater, the SWP3 may be developed to require that these inspections will occur at least once every seven (7) calendar days. If this alternative schedule is developed, then the inspection must occur regardless of whether or not there has been a rainfall event since the previous inspection.

The inspections may occur on either schedule provided that the SWP3 reflects the current schedule and that any changes to the schedule are conducted in accordance with the following provisions: the schedule may be changed a maximum of one time each month, the schedule change must be implemented at the beginning of a calendar month, and the reason for the schedule change must be documented in the SWP3 (e.g., end of “dry” season and beginning of “wet” season).

(b) Utility line installation, pipeline construction, and other examples of long, narrow, linear construction activities may provide inspection personnel with limited access to the areas described in Part III.F.7.(a) above. Inspection of these areas could require that vehicles compromise temporarily or even permanently stabilized areas, cause additional disturbance of soils, and increase the potential for erosion. In these circumstances, controls must be inspected at least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater, but representative inspections may be performed. For representative inspections, personnel must inspect controls along the construction site for 0.25 mile above and below each access point where a roadway, undisturbed right-of-way, or other similar feature intersects the construction site and allows access to the areas described in Part III.F.7.(a)

above. The conditions of the controls along each inspected 0.25 mile portion may be considered as representative of the condition of controls along that reach extending from the end of the 0.25 mile portion to either the end of the next 0.25 mile inspected portion, or to the end of the project, whichever occurs first.

As an alternative to the above-described inspection schedule of once every 14 calendar days and within 24 hours of a storm event of 0.5 inches or greater, the SWP3 may be developed to require that these inspections will occur at least once every seven (7) calendar days. If this alternative schedule is developed, the inspection must occur regardless of whether or not there has been a rainfall event since the previous inspection. The inspections may occur on either schedule provided that the SWP3 reflects the current schedule and that any changes to the schedule are conducted in accordance with the following provisions: the schedule may be changed a maximum of one time each month, the schedule change must be implemented at the beginning of a calendar month, and the reason for the schedule change must be documented in the SWP3 (e.g., end of "dry" season and beginning of "wet" season).

(c) In the event of flooding or other uncontrollable situations which prohibit access to the inspection sites, inspections must be conducted as soon as access is practicable.

(d) The SWP3 must be modified based on the results of inspections, as necessary, to better control pollutants in runoff. Revisions to the SWP3 must be completed within seven (7) calendar days following the inspection. If existing BMPs are modified or if additional BMPs are necessary, an implementation schedule must be described in the SWP3 and wherever possible those changes implemented before the next storm event. If implementation before the next anticipated storm event is impracticable, these changes must be implemented as soon as practicable.

(e) A report summarizing the scope of the inspection, the date(s) of the inspection, and major observations relating to the implementation of the SWP3 must be made and retained as part of the SWP3. Major observations should include: The locations of discharges of sediment or other pollutants from the site; locations of BMPs that need to be maintained; locations of BMPs that failed to operate as designed or proved inadequate for a particular location; and locations where additional BMPs are needed.

Actions taken as a result of inspections must be described within, and retained as a part of, the SWP3. Reports must identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the facility or site is in compliance with the SWP3 and this permit. The report must be signed by the person and in the manner required by 30 TAC §305.128 (relating to Signatories to Reports).

The names and qualifications of personnel making the inspections for the permittee may be documented once in the SWP3 rather than being included in each report.

8. The SWP3 must identify and ensure the implementation of appropriate pollution prevention measures for all eligible non-stormwater components of the discharge, as listed in Part II.A.3. of this permit.
9. The SWP3 must include the information required in Part III.B. of this general permit.
10. The SWP3 must include pollution prevention procedures that comply with Part III.G.4 of this general permit.

Section G. Erosion and Sediment Control Requirements Applicable to All Sites

Except as provided in 40 CFR §§125.30-125.32, any discharge regulated under this general permit, with the exception of sites that obtained waivers based on low rainfall erosivity, must achieve, at a minimum, the following effluent limitations representing the degree of effluent reduction attainable by application of the best practicable control technology currently available (BPT).

1. *Erosion and sediment controls*. Design, install, and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:

   (a) Control stormwater volume and velocity within the site to minimize soil erosion;

   (b) If any stormwater flow will be channelized at the site, stormwater controls must be designed to control both peak flowrates and total stormwater volume to minimize erosion at outlets and to minimize downstream channel and streambank erosion;

   (c) Minimize the amount of soil exposed during construction activity;

   (d) Minimize the disturbance of steep slopes;

   (e) Minimize sediment discharges from the site. The design, installation, and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site;

   (f) If earth disturbance activities are located in close proximity to a surface water, provide and maintain appropriate natural buffers if feasible and as necessary, around surface waters, depending on site-specific topography, sensitivity, and proximity to water bodies. Direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration. If providing buffers is infeasible, the permittee shall document the reason that natural buffers are not feasible, and shall implement additional erosion and sediment controls to reduce sediment load;

   (g) Preserve native topsoil at the site, unless infeasible; and

   (h) Minimize soil compaction in post-construction pervious areas. In areas of the construction site where final vegetative stabilization will occur or where infiltration practices will be installed, either:

      (1) restrict vehicle and equipment use to avoid soil compaction; or

      (2) prior to seeding or planting areas of exposed soil that have been compacted, use techniques that condition the soils to support vegetative growth, if necessary and feasible;

   (i) TCEQ does not consider stormwater control features (e.g., stormwater conveyance channels, storm drain inlets, sediment basins) to constitute "surface waters" for the purposes of triggering the buffer requirement in Part III.G.(f) above.

2. *Soil stabilization*. Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. In the context of this requirement, "immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased. Temporary

stabilization must be completed no more than 14 calendar days after initiation of soil stabilization measures, and final stabilization must be achieved prior to termination of permit coverage. In arid, semi-arid, and drought-stricken areas where initiating vegetative stabilization measures immediately is infeasible, alternative non-vegetative stabilization measures must be employed as soon as practicable. Refer to Part III.F.2.(b) for complete erosion control and stabilization practice requirements.

3. *Dewatering*. Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited, unless managed by appropriate controls.
4. *Pollution prevention measures*. Design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented, and maintained to:
   (a) Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
   (b) Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater; and
   (c) Minimize the discharge of pollutants from spills and leaks, and implement chemical spill and leak prevention and response procedures.
5. *Prohibited discharges*. The following discharges are prohibited:
   (a) Wastewater from wash out of concrete trucks, unless managed by an appropriate control (see Part V of the general permit);
   (b) Wastewater from wash out and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
   (c) Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and
   (d) Soaps or solvents used in vehicle and equipment washing.
6. *Surface outlets*. When discharging from basins and impoundments, utilize outlet structures that withdraw water from the surface, unless infeasible.

Part IV. Stormwater Runoff from Concrete Batch Plants

Discharges of stormwater runoff from concrete batch plants at regulated construction sites may be authorized under the provisions of this general permit provided that the following requirements are met for concrete batch plant(s) authorized under this permit. If discharges of stormwater runoff from concrete batch plants are not covered under this general permit, then discharges must be authorized under an alternative general permit or individual permit. This permit does not authorize the discharge or land disposal of any wastewater from concrete batch plants at regulated construction sites. Authorization for these wastes must be obtained under an individual permit or an alternative general permit.

Section A. Benchmark Sampling Requirements

1. Operators of concrete batch plants authorized under this general permit shall sample the stormwater runoff from the concrete batch plants according to the requirements

of this section of this general permit, and must conduct evaluations on the effectiveness of the SWP3 based on the following benchmark monitoring values:

Table 1. Benchmark Parameters

Benchmark Parameter	Benchmark Value	Sampling Frequency	Sample Type
Oil and Grease	15 mg/L	1/quarter (*1) (*2)	Grab (*3)
Total Suspended Solids	100 mg/L	1/quarter (*1) (*2)	Grab (*3)
pH	6.0 – 9.0 Standard Units	1/quarter (*1) (*2)	Grab (*3)
Total Iron	1.3 mg/L	1/quarter (*1) (*2)	Grab (*3)

(*1) When discharge occurs. Sampling is required within the first 30 minutes of discharge. If it is not practicable to take the sample, or to complete the sampling, within the first 30 minutes, sampling must be completed within the first hour of discharge. If sampling is not completed within the first 30 minutes of discharge, the reason must be documented and attached to all required reports and records of the sampling activity.

(*2) Sampling must be conducted at least once during each of the following periods. The first sample must be collected during the first full quarter that a stormwater discharge occurs from a concrete batch plant authorized under this general permit.

January through March

April through June

July through September

October through December

For projects lasting less than one full quarter, a minimum of one sample shall be collected, provided that a stormwater discharge occurred at least once following submission of the NOI or following the date that automatic authorization was obtained under Section II.E.2., and prior to terminating coverage.

(*3) A grab sample shall be collected from the stormwater discharge resulting from a storm event that is at least 0.1 inches of measured precipitation that occurs at least 72 hours from the previously measurable storm event. The sample shall be collected downstream of the concrete batch plant, and where the discharge exits any BMPs utilized to handle the runoff from the batch plant, prior to commingling with any other water authorized under this general permit.

2. The permittee must compare the results of sample analyses to the benchmark values above, and must include this comparison in the overall assessment of the SWP3's effectiveness. Analytical results that exceed a benchmark value are not a violation of this permit, as these values are not numeric effluent limitations. Results of analyses are indicators that modifications of the SWP3 should be assessed and may be necessary to protect water quality. The operator must investigate the cause for each exceedance and must document the results of this investigation in the SWP3 by the end of the quarter following the sampling event.

The operator's investigation must identify the following:

(a) any additional potential sources of pollution, such as spills that might have occurred,

(b) necessary revisions to good housekeeping measures that are part of the SWP3,

(c) additional BMPs, including a schedule to install or implement the BMPs, and

(d) other parts of the SWP3 that may require revisions in order to meet the goal of the benchmark values.

Background concentrations of specific pollutants may also be considered during the investigation. If the operator is able to relate the cause of the exceedance to background concentrations, then subsequent exceedances of benchmark values for that pollutant may be resolved by referencing earlier findings in the SWP3. Background concentrations may be identified by laboratory analyses of samples of stormwater runon to the permitted facility, by laboratory analyses of samples of stormwater run-off from adjacent non-industrial areas, or by identifying the pollutant is a naturally occurring material in soils at the site.

Section B. Best Management Practices (BMPs) and SWP3 Requirements

Minimum SWP3 Requirements – The following are required in addition to other SWP3 requirements listed in this general permit (including, but not limited to Part III.F.7. of this permit):

1. Description of Potential Pollutant Sources - The SWP3 must provide a description of potential sources (activities and materials) that may reasonably be expected to affect the quality of stormwater discharges associated with concrete batch plants authorized under this permit. The SWP3 must describe practices that that will be used to reduce the pollutants in these discharges to assure compliance with this general permit, including the protection of water quality, and must ensure the implementation of these practices.

   The following must be developed, at a minimum, in support of developing this description:

   (a) Drainage – The site map must include the following information:

      (1) the location of all outfalls for stormwater discharges associated with concrete batch plants that are authorized under this permit;

      (2) a depiction of the drainage area and the direction of flow to the outfall(s);

      (3) structural controls used within the drainage area(s);

      (4) the locations of the following areas associated with concrete batch plants that are exposed to precipitation: vehicle and equipment maintenance activities (including fueling, repair, and storage areas for vehicles and equipment scheduled for maintenance); areas used for the treatment, storage, or disposal of wastes; liquid storage tanks; material processing and storage areas; and loading and unloading areas; and

      (5) the locations of the following: any bag house or other dust control device(s); recycle/sedimentation pond, clarifier or other device used for the treatment of facility wastewater (including the areas that drain to the treatment device); areas with significant materials; and areas where major spills or leaks have occurred.

   (b) Inventory of Exposed Materials – A list of materials handled at the concrete batch plant that may be exposed to stormwater and that have a potential to

affect the quality of stormwater discharges associated with concrete batch plants that are authorized under this general permit.

(c) Spills and Leaks - A list of significant spills and leaks of toxic or hazardous pollutants that occurred in areas exposed to stormwater and that drain to stormwater outfalls associated with concrete batch plants authorized under this general permit must be developed, maintained, and updated as needed.

(d) Sampling Data - A summary of existing stormwater discharge sampling data must be maintained, if available.

2. Measures and Controls - The SWP3 must include a description of management controls to regulate pollutants identified in the SWP3's "Description of Potential Pollutant Sources" from Part IV.B.1.(a) of this permit, and a schedule for implementation of the measures and controls. This must include, at a minimum:

(a) Good Housekeeping - Good housekeeping measures must be developed and implemented in the area(s) associated with concrete batch plants.

(1) Operators must prevent or minimize the discharge of spilled cement, aggregate (including sand or gravel), settled dust, or other significant materials from paved portions of the site that are exposed to stormwater. Measures used to minimize the presence of these materials may include regular sweeping or other equivalent practices. These practices must be conducted at a frequency that is determined based on consideration of the amount of industrial activity occurring in the area and frequency of precipitation, and shall occur at least once per week when cement or aggregate is being handled or otherwise processed in the area.

(2) Operators must prevent the exposure of fine granular solids, such as cement, to stormwater. Where practicable, these materials must be stored in enclosed silos, hoppers or buildings, in covered areas, or under covering.

(b) Spill Prevention and Response Procedures - Areas where potential spills that can contribute pollutants to stormwater runoff, and the drainage areas from these locations, must be identified in the SWP3. Where appropriate, the SWP3 must specify material handling procedures, storage requirements, and use of equipment. Procedures for cleaning up spills must be identified in the SWP3 and made available to the appropriate personnel.

(c) Inspections - Qualified facility personnel (i.e., a person or persons with knowledge of this general permit, the concrete batch plant, and the SWP3 related to the concrete batch plant(s) for the site) must be identified to inspect designated equipment and areas of the facility specified in the SWP3. The inspection frequency must be specified in the SWP3 based upon a consideration of the level of concrete production at the facility, but must be a minimum of once per month while the facility is in operation. The inspection must take place while the facility is in operation and must, at a minimum, include all areas that are exposed to stormwater at the site, including material handling areas, above ground storage tanks, hoppers or silos, dust collection/containment systems, truck wash down and equipment cleaning areas. Follow-up procedures must be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections must be maintained and be made readily available for inspection upon request.

(d) Employee Training - An employee training program must be developed to educate personnel responsible for implementing any component of the SWP3, or personnel otherwise responsible for stormwater pollution prevention, with the provisions of the SWP3. The frequency of training must be documented in

the SWP3, and at a minimum, must consist of one training prior to the initiation of operation of the concrete batch plant.

(e) Record Keeping and Internal Reporting Procedures - A description of spills and similar incidents, plus additional information that is obtained regarding the quality and quantity of stormwater discharges, must be included in the SWP3. Inspection and maintenance activities must be documented and records of those inspection and maintenance activities must be incorporated in the SWP3.

(f) Management of Runoff - The SWP3 shall contain a narrative consideration for reducing the volume of runoff from concrete batch plants by diverting runoff or otherwise managing runoff, including use of infiltration, detention ponds, retention ponds, or reusing of runoff.

3. Comprehensive Compliance Evaluation – At least once per year, one or more qualified personnel (i.e., a person or persons with knowledge of this general permit, the concrete batch plant, and the SWP3 related to the concrete batch plant(s) for the site) shall conduct a compliance evaluation of the plant. The evaluation must include the following.

(a) Visual examination of all areas draining stormwater associated with regulated concrete batch plants for evidence of, or the potential for, pollutants entering the drainage system. These include but are not limited to: cleaning areas, material handling areas, above ground storage tanks, hoppers or silos, dust collection/containment systems, and truck wash down and equipment cleaning areas. Measures implemented to reduce pollutants in runoff (including structural controls and implementation of management practices) must be evaluated to determine if they are effective and if they are implemented in accordance with the terms of this permit and with the permittee's SWP3. The operator shall conduct a visual inspection of equipment needed to implement the SWP3, such as spill response equipment.

(b) Based on the results of the evaluation, the following must be revised as appropriate within two weeks of the evaluation: the description of potential pollutant sources identified in the SWP3 (as required in Part IV.B.1., "Description of Potential Pollutant Sources"); and pollution prevention measures and controls identified in the SWP3 (as required in Part IV.B.2., "Measures and Controls"). The revisions may include a schedule for implementing the necessary changes.

(c) The permittee shall prepare and include in the SWP3 a report summarizing the scope of the evaluation, the personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the SWP3, and actions taken in response to the findings of the evaluation. The report must identify any incidents of noncompliance. Where the report does not identify incidences of noncompliance, the report must contain a statement that the evaluation did not identify any incidence(s), and the report must be signed according to 30 TAC §305.128, relating to Signatories to Reports.

(d) The Comprehensive Compliance Evaluation may substitute for one of the required inspections delineated in Part IV.B.2.(c) of this general permit.

Section C. Prohibition of Wastewater Discharges

Wastewater discharges associated with concrete production including wastewater disposal by land application are not authorized under this general permit. These wastewater discharges must be authorized under an alternative TCEQ water quality permit or otherwise disposed of in an authorized manner. Discharges of concrete truck wash out at construction sites may be authorized if conducted in accordance with the requirements of Part V of this general permit.

Part V. Concrete Truck Wash Out Requirements

This general permit authorizes the wash out of concrete trucks at construction sites regulated under Sections II.E.1., 2., and 3. of this general permit, provided the following requirements are met. Authorization is limited to the land disposal of wash out water from concrete trucks. Any other direct discharge of concrete production waste water must be authorized under a separate TCEQ general permit or individual permit.

1. Direct discharge of concrete truck wash out water to surface water in the state, including discharge to storm sewers, is prohibited by this general permit.
2. Concrete truck wash out water shall be discharged to areas at the construction site where structural controls have been established to prevent direct discharge to surface waters, or to areas that have a minimal slope that allow infiltration and filtering of wash out water to prevent direct discharge to surface waters. Structural controls may consist of temporary berms, temporary shallow pits, temporary storage tanks with slow rate release, or other reasonable measures to prevent runoff from the construction site.
3. Wash out of concrete trucks during rainfall events shall be minimized. The direct discharge of concrete truck wash out water is prohibited at all times, and the operator shall insure that its BMPs are sufficient to prevent the discharge of concrete truck wash out as the result of rainfall or stormwater runoff.
4. The discharge of wash out water must not cause or contribute to groundwater contamination.
5. If a SWP3 is required to be implemented, the SWP3 shall include concrete wash out areas on the associated site map.

Part VI. Retention of Records

The permittee must retain the following records for a minimum period of three (3) years from the date that a NOT is submitted as required by Part II.E.3. For activities in which an NOT is not required, records shall be retained for a minimum period of three (3) years from the date that the operator terminates coverage under Section II.F.3. of this permit. Records include:

1. A copy of the SWP3;
2. All reports and actions required by this permit, including a copy of the construction site notice;
3. All data used to complete the NOI, if an NOI is required for coverage under this general permit; and
4. All records of submittal of forms submitted to the operator of any MS4 receiving the discharge and to the secondary operator of a large construction site, if applicable.

Part VII. Standard Permit Conditions

1. The permittee has a duty to comply with all permit conditions. Failure to comply with any permit condition is a violation of the permit and statutes under which it was issued, and is grounds for enforcement action, for terminating, revoking, or denying coverage under this general permit, or for requiring a discharger to apply for and obtain an individual TPDES permit.
2. Authorization under this general permit may be suspended or revoked for cause. Filing a notice of planned changes or anticipated non-compliance by the permittee does not stay any permit condition. The permittee must furnish to the executive director, upon request and within a reasonable time, any information necessary for the executive director to determine whether cause exists for revoking, suspending, or

terminating authorization under this permit. Additionally, the permittee must provide to the executive director, upon request, copies of all records that the permittee is required to maintain as a condition of this general permit.

3. It is not a defense for a discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the permit conditions.
4. Inspection and entry shall be allowed under TWC Chapters 26-28, Texas Health and Safety Code §§361.032-361.033 and 361.037, and 40 CFR §122.41(i). The statement in TWC §26.014 that commission entry of a facility shall occur according to an establishment's rules and regulations concerning safety, internal security, and fire protection is not grounds for denial or restriction of entry to any part of the facility or site, but merely describes the commission's duty to observe appropriate rules and regulations during an inspection.
5. The discharger is subject to administrative, civil, and criminal penalties, as applicable, under TWC Chapter 7 for violations including but not limited to the following:
   (a) negligently or knowingly violating the federal CWA §§301, 302, 306, 307, 308, 318, or 405, or any condition or limitation implementing any sections in a permit issued under CWA §402, or any requirement imposed in a pretreatment program approved under CWA §§402(a)(3) or 402(b)(8);
   (b) knowingly making any false statement, representation, or certification in any record or other document submitted or required to be maintained under a permit, including monitoring reports or reports of compliance or noncompliance; and
   (c) knowingly violating §303 of the federal CWA, and placing another person in imminent danger of death or serious bodily injury.
6. All reports and other information requested by the executive director must be signed by the person and in the manner required by 30 TAC §305.128 (relating to Signatories to Reports).
7. Authorization under this general permit does not convey property or water rights of any sort and does not grant any exclusive privilege.
8. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.
9. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
10. The permittee shall comply with the reporting requirements in 40 CFR §122.41(l), as applicable.

Part VIII. Fees

1. A fee of must be submitted along with the NOI:
   (a) $325 if submitting a paper NOI, or
   (b) $225 if submitting an NOI electronically.

2. Fees are due upon submission of the NOI. An NOI will not be declared administratively complete unless the associated fee has been paid in full.
3. No separate annual fees will be assessed for this general permit. The Water Quality Annual Fee has been incorporated into the NOI fees as described above.

Appendix A: Automatic Authorization

Periods of Low Erosion Potential by County – Eligible Date Ranges

Andrews: Nov. 15 - Apr. 30

Archer: Dec. 15 - Feb. 14

Armstrong: Nov. 15 - Apr. 30

Bailey: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Baylor: Dec. 15 - Feb. 14

Borden: Nov. 15 - Apr. 30

Brewster: Nov. 15 - Apr. 30

Briscoe: Nov. 15 - Apr. 30

Brown: Dec. 15 - Feb. 14

Callahan: Dec. 15 - Feb. 14

Carson: Nov. 15 - Apr. 30

Castro: Nov. 15 - Apr. 30

Childress: Dec. 15 - Feb. 14

Cochran: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Coke: Dec. 15 - Feb. 14

Coleman: Dec. 15 - Feb. 14

Collingsworth: Jan. 1 - Mar. 30, or Dec. 1 - Feb. 28

Concho: Dec. 15 - Feb. 14

Cottle: Dec. 15 - Feb. 14

Crane: Nov. 15 - Apr. 30

Crockett: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Crosby: Nov. 15 - Apr. 30

Culberson: Nov. 1 - May 14

Dallam: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Dawson: Nov. 15 - Apr. 30

Deaf Smith: Nov. 15 - Apr. 30

Dickens: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Dimmit: Dec. 15 - Feb. 14

Donley: Jan. 1 - Mar. 30, or Dec. 1 - Feb. 28

Eastland: Dec. 15 - Feb. 14

Ector: Nov. 15 - Apr. 30

Edwards: Dec. 15 - Feb. 14

El Paso: Jan. 1 - Jul. 14, or May 15 - Jul. 31, or Jun. 1 - Aug. 14, or Jun. 15 - Sept. 14, or Jul. 1 - Oct. 14, or Jul. 15 - Oct. 31, or Aug. 1 - Apr. 30, or Aug. 15 - May 14, or Sept. 1 - May 30, or Oct. 1 - Jun. 14, or Nov. 1 - Jun. 30, or Nov. 15 - Jul. 14

Fisher: Dec. 15 - Feb. 14

Floyd: Nov. 15 - Apr. 30

Foard: Dec. 15 - Feb. 14

Gaines: Nov. 15 - Apr. 30

Garza: Nov. 15 - Apr. 30

Glasscock: Nov. 15 - Apr. 30

Hale: Nov. 15 - Apr. 30

Hall: Feb. 1 - Mar. 30

Hansford: Nov. 15 - Apr. 30

Hardeman: Dec. 15 - Feb. 14

Hartley: Nov. 15 - Apr. 30

Haskell: Dec. 15 - Feb. 14

Hockley: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Howard: Nov. 15 - Apr. 30

Hudspeth: Nov. 1 - May 14

Hutchinson: Nov. 15 - Apr. 30

Irion: Dec. 15 - Feb. 14

Jeff Davis: Nov. 1 - Apr. 30 or Nov. 15 - May 14

Jones: Dec. 15 - Feb. 14

Kent: Nov. 15 - Jan. 14 or Feb. 1 - Mar. 30

Kerr: Dec. 15 - Feb. 14

Kimble: Dec. 15 - Feb. 14

King: Dec. 15 - Feb. 14

Kinney: Dec. 15 - Feb. 14

Knox: Dec. 15 - Feb. 14

Lamb: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Loving: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Lubbock: Nov. 15 - Apr. 30

Lynn: Nov. 15 - Apr. 30

Martin: Nov. 15 - Apr. 30

Mason: Dec. 15 - Feb. 14

Maverick: Dec. 15 - Feb. 14

McCulloch: Dec. 15 - Feb. 14

Menard: Dec. 15 - Feb. 14

Midland: Nov. 15 - Apr. 30

Mitchell: Nov. 15 - Apr. 30

Moore: Nov. 15 - Apr. 30

Motley: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Nolan: Dec. 15 - Feb. 14

Oldham: Nov. 15 - Apr. 30

Parmer: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Pecos: Nov. 15 - Apr. 30

Potter: Nov. 15 - Apr. 30

Presidio: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Randall: Nov. 15 - Apr. 30

Reagan: Nov. 15 - Apr. 30

Real: Dec. 15 - Feb. 14

Reeves: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Runnels: Dec. 15 - Feb. 14

Schleicher: Dec. 15 - Feb. 14

Scurry: Nov. 15 - Apr. 30

Shackelford: Dec. 15 - Feb. 14

Sherman: Nov. 15 - Apr. 30

Stephens: Dec. 15 - Feb. 14

Sterling: Nov. 15 - Apr. 30

Stonewall: Dec. 15 - Feb. 14

Sutton: Dec. 15 - Feb. 14

Swisher: Nov. 15 - Apr. 30

Taylor: Dec. 15 - Feb. 14

Terrell: Nov. 15 - Apr. 30

Terry: Nov. 15 - Apr. 30

Throckmorton: Dec. 15 - Feb. 14

Tom Green: Dec. 15 - Feb. 14

Upton: Nov. 15 - Apr. 30

Uvalde: Dec. 15 - Feb. 14

Val Verde: Nov. 15 - Jan. 14, or Feb. 1 - Mar. 30

Ward: Nov. 1 - Apr. 14, or Nov. 15 - Apr. 30

Wichita: Dec. 15 - Feb. 14

Wilbarger: Dec. 15 - Feb. 14

Winkler: Nov. 1 - Apr. 30, or Nov. 15 - May 14

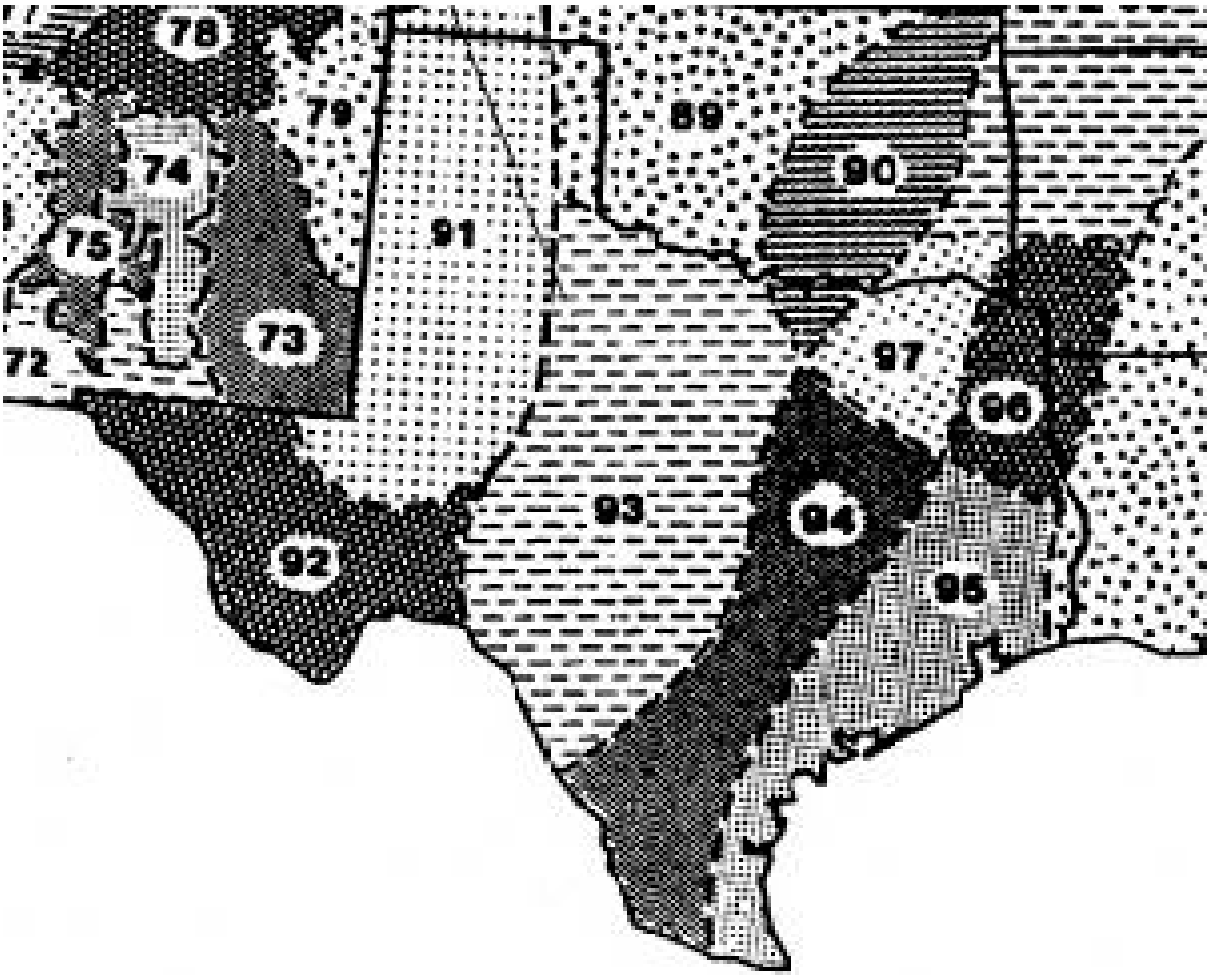
Yoakum: Nov. 1 - Apr. 30, or Nov. 15 - May 14

Young: Dec. 15 - Feb. 14

Wheeler: Jan. 1 - Mar. 30, or Dec. 1 - Feb. 28

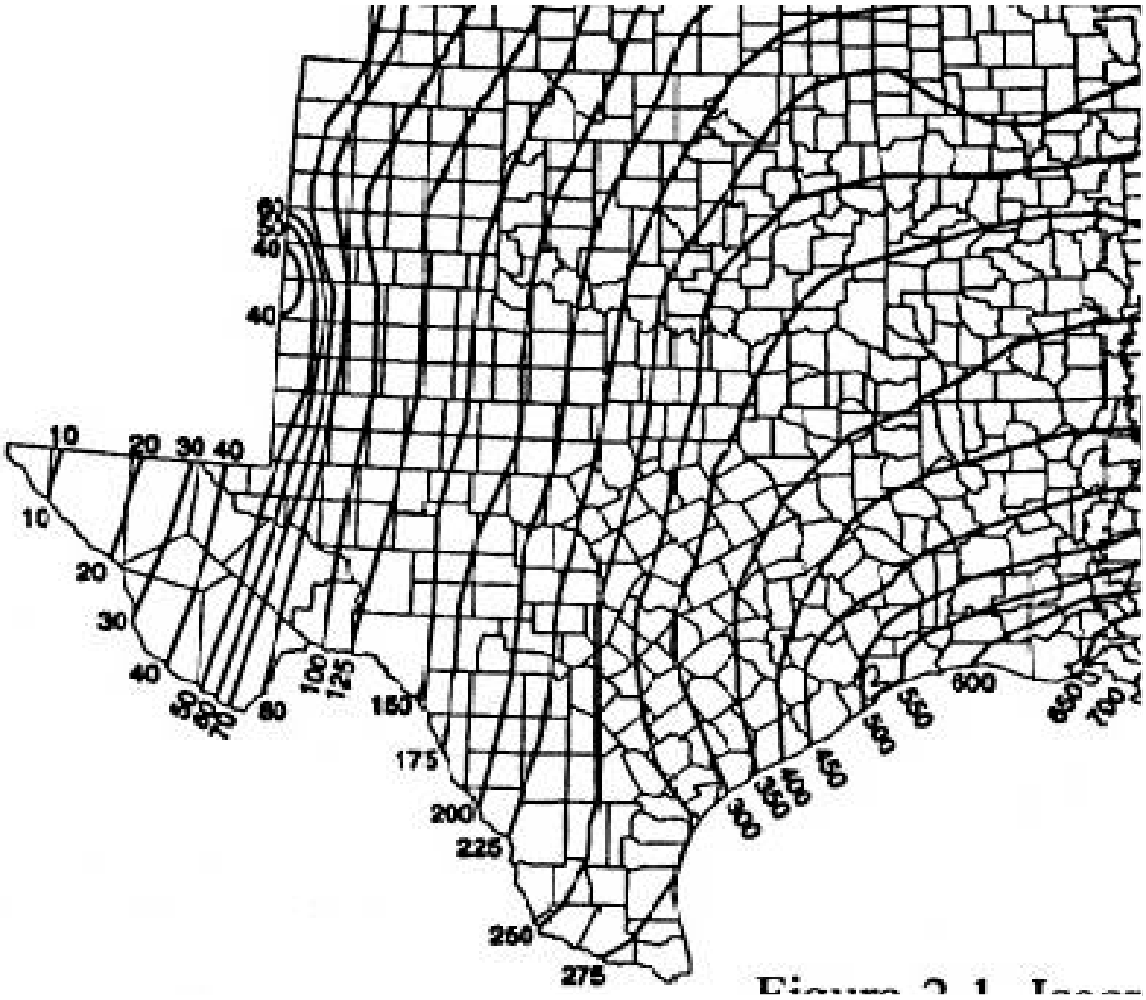
Zavala: Dec. 15 - Feb. 14

Appendix B: Erosivity Index (EI) Zones in Texas



Adapted from Chapter 2 of USDA Agriculture Handbook 703: "Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)," U.S. Department of Agriculture, Agricultural Research Service

Appendix C: Isoerodent Map



Adapted from Chapter 2 of USDA Agriculture Handbook 703: "Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)," U.S. Department of Agriculture, Agricultural Research Service

Appendix D: Erosivity Indices for EI Zones in Texas

Periods:

EI #	1/1	1/16	1/31	2/15	3/1	3/16	3/31	4/15	4/30	5/15	5/30	6/14	6/29	7/14	7/29	8/13	8/28	9/12	9/27	10/12	10/27	11/11	11/26	12/11	12/31
89	0	1	1	2	3	4	7	2	8	27	38	48	55	62	69	76	83	90	94	97	98	99	100	100	100
90	0	1	2	3	4	6	8	13	21	29	37	46	54	60	65	69	74	81	87	92	95	97	98	99	100
91	0	0	0	0	1	1	1	2	6	16	29	39	46	53	60	67	74	81	88	95	99	99	100	100	100
92	0	0	0	0	1	1	1	2	6	16	29	39	46	53	60	67	74	81	88	95	99	99	100	100	100
93	0	1	1	2	3	4	6	8	13	25	40	49	56	62	67	72	76	80	85	91	97	98	99	99	100
94	0	1	2	4	6	8	10	15	21	29	38	47	53	57	61	65	70	76	83	88	91	94	96	98	100
95	0	1	3	5	7	9	11	14	18	27	35	41	46	51	57	62	68	73	79	84	89	93	96	98	100
96	0	2	4	6	9	12	17	23	30	37	43	49	54	58	62	66	70	74	78	82	86	90	94	97	100
97	0	1	3	5	7	10	14	20	28	37	48	56	61	64	68	72	77	81	86	89	92	95	98	99	100
106	0	3	6	9	13	17	21	27	33	38	44	49	55	61	67	71	75	78	81	84	86	90	94	97	100

* Each period begins on the date listed in the table above and lasts until the day before the following period. The final period begins on December 11 and ends on December 31.

Table adapted from Chapter 2 of USDA Agriculture Handbook 703: "Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)," U.S. Department of Agriculture, Agricultural Research Service

APPENDIX H

SITE NOTICE, NOTICE OF INTENT, NOTICE OF CHANGE AND NOTICE OF TERMINATION FORMS

Operator Notes

Construction Site Notice

The construction site notice located in Appendix H should be posted along with a signed copy of the Notice of Intent. The site notice must be located where it is safely and readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction.

Notice of Intent (NOI)

The TPDES General Permit TXR 150000 requires that a NOI be submitted before construction activities begin. The NOI is essentially an application and contains items such as important information about your site, including site location, owner information, operator (general contractor) information, receiving water(s), and a brief description of the project.

TCEQ has developed a form to be used by industrial facilities and construction activities when they submit NOIs. This form indicates all the information that you are required to provide and must be used in order for the NOI to be processed correctly.

Primary Operators

Please note that both Owners and Contractors can meet the definition of being a "primary operator."

Primary operators must submit a NOI at least seven days prior to commencing construction activities, or if utilizing electronic submittal, prior to commencing construction activities.

If an additional primary operator is added after the initial NOI is submitted, the new primary operator must:

- submit a paper NOI at least seven days before assuming operational control, or
- submit an electronic NOI prior to assuming operational control.

If the primary operator changes after the initial NOI is submitted, the new primary operator must:

- submit a paper NOI at least ten days before assuming operational control, or
- submit an electronic NOI at least ten days before assuming operational control

All primary operators must post a copy of the signed NOI at the construction site in allocation where it is readily available for viewing by the general public, local, state, and federal authorities prior to commencing construction activities. A copy of the signed NOI must be submitted to the operator of any MS4 receiving the discharge and to any secondary operator, at least seven days prior to commencing construction activities. A list of the MS4 operators receiving a copy of the NOI is located in Appendix H.

Secondary Operators

Secondary operators are not required to submit a NOI, provided that another operator(s) at the site has submitted a NOI, or is required to submit a NOI and the secondary operator has provided notification to the operator(s) of the need to obtain coverage under the permit. Please refer to the general permit for more information.

NOI Fees

Please note the fees associated with NOI submission:

- $325 if submitting a paper NOI, or
- $225 if submitting an electronic NOI.

No separate annual fees will be assessed. The Water Quality Annual fee has been incorporated into the NOI fees.

It is anticipated that there will be projects where more than one entity (e.g., the owner, developer, or general contractor) will need to submit an NOI so that the requirements for an operator are met. In this case, those persons will share the Storm Water Pollution Plan, and the submittal of the NOI and the TPDES Permit Number will need to be recorded in the NOI log located in Appendix F.

Please refer to the general permit and NOI form instructions for more information.

Notice of Change (NOC)

The operators are responsible for updating the SWP3 to implement and maintain sediment controls and submit a Notice of Change (NOC) if off-site material, waste, borrow, fill or equipment storage areas are being utilized and are not under a separate permit. An operator must submit a NOC letter in conformance with TPDES General Permit TXR150000 if they become aware of any incorrect information in an NOI or failed to submit any relevant facts.

Information that may be included on an NOC includes, but is not limited to, the following: the description of the construction project, an increase in the number of acres disturbed (for increases of one or more acres), or the operator name. A transfer of operational control from one operator to another, including a transfer of the ownership of a company, may not be included in an NOC. A transfer of ownership of a company includes changes to the structure of a company, such as changing from a partnership to a corporation or changing corporation types, so that the filing number (or charter number) that is on record with the Texas Secretary of State must be changed.

An NOC is not required for notifying TCEQ of a decrease in the number of acres disturbed. This information must be included in the storm water pollution prevention plan (SWP3) and retained on site.

A list of the MS4 operators receiving a copy of the NOC is located in Appendix H.

Notice of Termination (NOT)

Any operator that has submitted a NOI must apply to terminate authorization of the general permit. The NOT is a form which should be completed and submitted to the TCEQ within 30 days of the following:

- final stabilization has been achieved on all portions of the site that are the responsibility of the permittee,

- a transfer of operational control has occurred, or
- the operator has obtained alternative authorization under an individual TPDES permit or alternative TPDES general permit.

Information to be included on the NOT includes the location of the construction site; the name, address, and telephone number of the operator terminating coverage; the TPDES General Permit Number; an indication of why coverage under the permit should be terminated for the operator; and a signed certification statement.

Authorization under the general permit terminates at midnight on the day the NOT is postmarked for delivery to the TCEQ. If the NOT is submitted electronically, the permit terminates immediately following confirmation of receipt of the NOT by TCEQ.

Note that when there is a change in operators of a construction activity, then the new operator must submit an NOI.

NOT's should be submitted to MS4 Operator(s). A list of the MS4 operator(s) receiving a copy of the NOT is located in Appendix H.

Record of Submittals to MS4s

Form Type	MS4 Name	Address	Date Submitted

LARGE CONSTRUCTION SITE NOTICE

FOR THE
Texas Commission on Environmental Quality (TCEQ)
Storm Water Program

TPDES GENERAL PERMIT TXR150000

"PRIMARY OPERATOR" NOTICE

This notice applies to construction sites operating under Part II.E.3. of the TPDES General Permit Number TXR150000 for discharges of storm water runoff from construction sites equal to or greater than five acres, including the larger common plan of development. The information on this notice is required in Part III.D.2. of the general permit. This notice shall be posted along with a copy of the signed Notice of Intent (NOI), as applicable. Additional information regarding the TCEQ storm water permit program may be found on the internet at:

http://www.tceq.state.tx.us/nav/permits/sw_permits.html

Site-Specific TPDES Authorization Number:	
Operator Name:	
Contact Name and Phone Number:	
Project Description: *Physical address or description of the site's location, and estimated start date and projected end date, or date that disturbed soils will be stabilized.*	
Location of Storm Water Pollution Prevention Plan:	

LARGE CONSTRUCTION SITE NOTICE

FOR THE
Texas Commission on Environmental Quality (TCEQ)
Storm Water Program

TPDES GENERAL PERMIT TXR150000

"SECONDARY OPERATOR" NOTICE

This notice applies to secondary operators of construction sites operating under Part II.E.3. of the TPDES General Permit Number TXR150000 for discharges of storm water runoff from construction sites equal to or greater than five acres, including the larger common plan of development. The information on this notice is required in Part III.D.2. of the general permit. Additional information regarding the TCEQ storm water permit program may be found on the internet at:

http://www.tceq.state.tx.us/nav/permits/sw_permits.html

Site-Specific TPDES Authorization Number:	TXR150000
Operator Name:	
Contact Name and Phone Number:	
Project Description: *Physical address or description of the site's location, and estimated start date and projected end date, or date that disturbed soils will be stabilized.*	
Location of Storm Water Pollution Prevention Plan (SWP3):	

For Large Construction Activities Authorized Under Part II.E.3. (Obtaining Authorization to Discharge) the following certification must be completed:

I _____ (Typed or Printed Name Person Completing This Certification) certify under penalty of law that I have read and understand the eligibility requirements for claiming an authorization under Part II.E.3. of TPDES General Permit TXR150000 and agree to comply with the terms of this permit. A storm water pollution prevention plan has been developed and will be implemented prior to construction, according to permit requirements. A copy of this signed notice is supplied to the operator of the MS4 if discharges enter an MS4. I am aware there are significant penalties for providing false information or for conducting unauthorized discharges, including the possibility of fine and imprisonment for knowing violations.

Signature and Title_____ Date _____

_____*Date Notice Removed*
____*MS4 operator notified per Part II.F.3.*

TCEQ Office Use Only
Permit No.:
RN:
CN:
Region:

RESET FORM

Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)

IMPORTANT:

- Use the **INSTRUCTIONS** to fill out each question in this form.
- Use the **CHECKLIST** to make certain all you filled out all required information. Incomplete applications **WILL** delay approval or result in automatic denial.
- Once processed your permit can be viewed at: http://www2.tceq.texas.gov/wq_dpa/index.cfm

ePERMITS: Sign up now for online NOI: https://www3.tceq.texas.gov/steers/index.cfm
Pay a $225 reduced application fee by using ePermits.

APPLICATION FEE:

- You must pay the **$325** Application Fee to TCEQ for the paper application to be complete.
- Payment and NOI must be mailed to separate addresses.
- Did you know you can pay on line?
  - Go to https://www3.tceq.texas.gov/epay/index.cfm
  - Select Fee Type: GENERAL PERMIT CONSTRUCTION STORM WATER DISCHARGE NOI APPLICATION
- **Provide your payment information below, for verification of payment:**

☐ Mailed — Check/Money Order No.: _____
Name Printed on Check: _____

☐ EPAY — Voucher No.: _____
Is the Payment Voucher copy attached? ☐ Yes

RENEWAL: Is this NOI a Renewal of an existing General Permit Authorization? (Note: A permit cannot be renewed after June 3, 2013.)

☐ Yes The Permit number is: TXR15_____
(If a permit number is not provided, a new number will be assigned.)
☐ No

1) OPERATOR (Applicant)

a) If the applicant is currently a customer with TCEQ, what is the Customer Number (CN) issued to this entity? You may search for your CN at: http://www12.tceq.texas.gov/crpub/index.cfm?fuseaction=cust.CustSearch

CN_____

b) What is the Legal Name of the entity (applicant) applying for this permit?

_____

(The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal document forming the entity.)

c) What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in TAC 305.44(a).
Prefix (Mr. Ms. Miss): _____
First/Last Name: _____ Suffix: _____
Title: _____ Credential: _____

d) What is the Operator Contact's (Responsible Authority) contact information and mailing address as recognized by the US Postal Service (USPS)? You may verify the address at: http://zip4.usps.com/zip4/welcome.jsp
Phone #: _____ ext: _____ Fax #: _____
E-mail: _____
Mailing Address: _____
Internal Routing (Mail Code, Etc.): _____
City: _____ State: _____ ZIP Code: _____
If outside USA: Territory: _____ Country Code: _____ Postal Code: _____

e) Indicate the type of Customer (The instructions will help determine your customer type):

☐ Individual	☐ Limited Partnership	☐ Sole Proprietorship-DBA
☐ Joint Venture	☐ General Partnership	☐ Corporation
☐ Trust	☐ Estate	☐ Federal Government
☐ State Government	☐ County Government	☐ City Government
☐ Other Government		

f) Independent Operator? ☐ Yes ☐ No
(If governmental entity, subsidiary, or part of a larger corporation, check "No".)

g) Number of Employees:
☐ 0-20; ☐ 21-100; ☐ 101-250; ☐ 251-500; or ☐ 501 or higher

h) Customer Business Tax and Filing Numbers:
(REQUIRED for Corporations and Limited Partnerships. Not Required for Individuals, Government, or Sole Proprietors)
State Franchise Tax ID Number: _____
Federal Tax ID: _____
Texas Secretary of State Charter (filing) Number: _____
DUNS Number (if known): _____

2) APPLICATION CONTACT

If TCEQ needs additional information regarding this application, who should be contacted?

Is the application contact the same as the applicant identified above?

☐ Yes, go to Section 3). ☐ No, complete section below.

Prefix (Mr. Ms. Miss): _____
First/Last Name: _____ Suffix: _____
Title: _____ Credential: _____

Organization Name:_____
Phone No.:_____ ext:_____ Fax Number:_____
E-mail:_____
Mailing Address:_____
Internal Routing (Mail Code, Etc.):_____
City:_____State:_____ZIP Code:_____
Mailing Information if outside USA:
Territory:_____Country Code:_____Postal Code:_____

3) REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE

If the site of your business is part of a larger business site or if other businesses were located at this site before yours, a Regulated Entity Number (RN) may already be assigned for the larger site. Use the RN assigned for the larger site. Search TCEQ's Central Registry to see if the larger site may already be registered as a regulated site at: http://www12.tceq.texas.gov/crpub/index.cfm?fuseaction=regent.RNSearch.

If the site is found, provide the assigned Regulated Entity Reference Number and provide the information for the site to be authorized through this application below. The site information for this authorization may vary from the larger site information.

a) TCEQ issued RE Reference Number (RN): RN_____

b) Name of project or site (the name known by the community where located):
_____

c) In your own words, briefly describe the primary business of the Regulated Entity: (Do not repeat the SIC and NAICS code):
_____

d) County (or counties if > 1) _____

e) Latitude:_____ Longitude: _____

f) Does the site have a physical address?
☐ Yes, complete Section A for a physical address.
☐ No, complete Section B for site location information.

Section A: Enter the physical address for the site.
Verify the address with USPS. If the address is not recognized as a delivery address, provide the address as identified for overnight mail delivery, 911 emergency or other online map tools to confirm an address.

Physical Address of Project or Site:
Street Number: _____ Street Name: _____
City: _____State: Texas ZIP Code: _____

Section B: Enter the site location information.

If no physical address (Street Number & Street Name), provide a written location access description to the site. (Ex.: located 2 miles west from intersection of Hwy 290 & IH35 accessible on Hwy 290 South)

City where the site is located or, if not in a city, what is the nearest city:

State: Texas ZIP Code where the site is located: _____

4) GENERAL CHARACTERISTICS

a) Is the project/site located on Indian Country Lands?

☐ Yes - If the answer is Yes, you must obtain authorization through EPA, Region 6.

☐ No

b) Is your construction activity associated with a facility that, when completed, would be associated with the exploration, development, or production of oil or gas or geothermal resources?

☐ Yes - If the answer is Yes, you may be under jurisdiction of the Railroad Commission of Texas and may need to obtain authorization through EPA, Region 6.

☐ No

c) What is the Primary Standard Industrial Classification (SIC) Code that best describes the construction activity being conducted at the site?
Primary SIC Code: _____

d) If applicable, what is the Secondary SIC Code(s): _____

e) What is the total number of acres disturbed? _____

f) Is the project site part of a larger common plan of development or sale?

☐ Yes - If the answer is Yes, the total number of acres disturbed can be less than 5 acres.

☐ No - If the answer is No, the total number of acres disturbed must be 5 or more. If the total number of acres disturbed is less than 5 then the project site does not qualify for coverage through this Notice of Intent. Coverage will be denied. See the requirements in the general permit for small construction sites.

g) What is the name of the first water body(s) to receive the stormwater runoff or potential runoff from the site?

_____

h) What is the segment number(s) of the classified water body(s) that the discharge will eventually reach?

_____

i) Is the discharge into an MS4?

☐ Yes - If the answer is Yes, provide the name of the MS4 operator below.

☐ No

If Yes, provide the name of the MS4 operator:

_____

Note: The general permit requires you to send a copy of the NOI to the MS4 operator.

j) Are any of the surface water bodies receiving discharges from the construction site on the latest EPA-approved CWA 303(d) List of impaired waters?

☐ Yes - If the answer is Yes, provide the name(s) of the impaired water body(s) below.

☐ No

If Yes, provide the name(s) of the impaired water body(s):

_____

k) Is the discharge or potential discharge within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer as defined in 30 TAC Chapter 213?

☐ Yes - If the answer is Yes, complete certification below by checking "Yes."

☐ No

I certify that a copy of the TCEQ approved Plan required by the Edwards Aquifer Rule (30 TAC Chapter 213) is either included or referenced in the Stormwater Pollution Prevention Plan.

☐ Yes

5) CERTIFICATION

Check Yes to the certifications below. Failure to indicate Yes to ***ALL*** items may result in denial of coverage under the general permit.

a) I certify that I have obtained a copy and understand the terms and conditions of the Construction General Permit (TXR150000). ☐ Yes

b) I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas. ☐ Yes

c) I understand that a Notice of Termination (NOT) must be submitted when this authorization is no longer needed. ☐ Yes

d) I certify that a Stormwater Pollution Prevention Plan has been developed, will be implemented prior to construction and to the best of my knowledge and belief is compliant with any applicable local sediment and erosion control plans, as required in the general permit TXR150000. Note: For multiple operators who prepare a shared SWP3, the confirmation of an operator may be limited to its obligations under the SWP3 provided all obligations are confirmed by at least one operator. ☐ Yes

Operator Certification:

I,_____ _____
Typed or printed name Title

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code 305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signature: _____ Date:_____
(Use blue ink)

NOTICE OF INTENT CHECKLIST (TXR150000)

- Did you complete everything? Use this checklist to be sure!
- Are you ready to mail your form to TCEQ? Go to the General Information Section of the Instructions for mailing addresses.

This checklist is for use by the operator to ensure a complete application. Missing information may result in denial of coverage under the general permit. (See NOI process description in the Instructions)

Application Fee:

If paying by Check:

- ☐ Check was mailed **separately** to the TCEQs Cashier's Office. (See Instructions for Cashier's address and Application address.)
- ☐ Check number and name on check is provided in this application.

If using ePay:

- ☐ The voucher number is provided in this application or a copy of the voucher is attached.

PERMIT NUMBER:

- ☐ Permit number provided – if this application is for renewal of an existing authorization.

OPERATOR INFORMATION - Confirm each item is complete:

- ☐ Customer Number (CN) issued by TCEQ Central Registry
- ☐ Legal name as filed to do business in Texas (Call TX SOS 512/463-5555)
- ☐ Name and title of responsible authority signing the application
- ☐ Mailing address is complete & verifiable with USPS. www.usps.com
- ☐ Phone numbers/e-mail address
- ☐ Type of operator (entity type)
- ☐ Independent operator
- ☐ Number of employees
- ☐ For corporations or limited partnerships – Tax ID and SOS filing numbers
- ☐ Application contact and address is complete & verifiable with USPS. http://www.usps.com

REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE - Confirm each item is complete:

- ☐ Regulated Entity Reference Number (RN) (if site is already regulated by TCEQ)
- ☐ Site/project name/regulated entity
- ☐ Latitude and longitude http://www.tceq.texas.gov/gis/sqmaview.html
- ☐ County
- ☐ Site/project physical address. Do not use a rural route or post office box.
- ☐ Business description

GENERAL CHARACTERISTICS - Confirm each item is complete:

- ☐ Indian Country Lands –the facility is not on Indian Country Lands
- ☐ Construction activity related to facility associated to oil, gas, or geothermal resources
- ☐ Standard Industrial Classification (SIC) Code www.osha.gov/oshstats/sicser.html
- ☐ Acres disturbed is provided and qualifies for coverage through a NOI
- ☐ Common plan of development or sale
- ☐ Receiving water body(s)
- ☐ Segment number(s)
- ☐ Impaired water body(s)
- ☐ MS4 operator
- ☐ Edwards Aquifer rule

CERTIFICATION

- ☐ Certification statements have been checked indicating "Yes"
- ☐ Signature meets 30 Texas Administrative Code (TAC) 305.44 and is original.

Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)

General Information and Instructions

GENERAL INFORMATION

Where to Send the Notice of Intent (NOI):

BY REGULAR U.S. MAIL
Texas Commission on
Environmental Quality
Stormwater Processing Center
(MC228)
P.O. Box 13087
Austin, Texas 78711-3087

BY OVERNIGHT/EXPRESS MAIL
Texas Commission on
Environmental Quality
Stormwater Processing Center
(MC228)
12100 Park 35 Circle
Austin, TX 78753

TCEQ Contact List:

Application – status and form questions:	*512/245-0130, swpermit@tceq.texas.gov*
Technical questions:	*512/239-4671, swgp@tceq.texas.gov*
Environmental Law Division:	*512/239-0600*
Records Management - obtain copies of forms:	*512/239-0900*
Reports from databases (as available):	*512/239-DATA (3282)*
Cashier's office:	*512/239-0357 or 512/239-0187*

Notice of Intent Process:

When your NOI is received by the program, the form will be processed as follows:

1) **Administrative Review:** Each item on the form will be reviewed for a complete response. In addition, the operator's legal name must be verified with Texas Secretary of State as valid and active (if applicable). The address(s) on the form must be verified with the US Postal service as receiving regular mail delivery. Never give an overnight/express mailing address.

2) **Notice of Deficiency:** If an item is incomplete or not verifiable as indicated above, a notice of deficiency (NOD) will be mailed to the operator. The operator will have 30 days to respond to the NOD. The response will be reviewed for completeness.

3) **Acknowledgment of Coverage:** An Acknowledgment Certificate will be mailed to the operator. This certificate acknowledges coverage under the general permit.

   -or-

   Denial of Coverage: If the operator fails to respond to the NOD or the response is inadequate, coverage under the general permit may be denied. If coverage is denied, the operator will be notified.

General Permit (Your Permit)

For NOIs submitted **electronically** through ePermits, provisional coverage under the general permit begins immediately following confirmation of receipt of the NOI form by the TCEQ.

For **paper** NOIs, provisional coverage under the general permit begins **7 days after a completed NOI is postmarked for delivery** to the TCEQ.

You should have a copy of your general permit when submitting your application. You may view and print your permit for which you are seeking coverage, on the TCEQ web site http://www.tceq.texas.gov. Search using key word TXR150000.

General Permit Forms

The Notice of Intent (NOI), Notice of Termination (NOT), and Notice of Change (NOC) (including instructions) are available in Adobe Acrobat PDF format on the TCEQ web site http://www.tceq.texas.gov.

Change in Operator

An authorization under the general permit is not transferable. If the operator of the regulated entity changes, the present permittee must submit a Notice of Termination and the new operator must submit a Notice of Intent. The NOT and NOI must be submitted no later than 10 days prior to the change in Operator status.

TCEQ Central Registry Core Data Form

The Core Data Form has been incorporated into this form. Do not send a Core Data Form to TCEQ. After final acknowledgment of coverage under the general permit, the program will assign a Customer Number and Regulated Entity Number.

You can find the information on the Central Registry web site at http://www12.tceq.texas.gov/crpub/index.cfm. You can search by the Regulated Entity (RN), Customer Number (CN) or Name (Permittee), or by your permit number under the search field labeled AAdditional ID@. Capitalize all letters in the permit number.

The Customer (Permittee) is responsible for providing consistent information to the TCEQ, and for updating all CN and RN data for all authorizations as changes occur. For General Permits, a Notice of Change form must be submitted to the program area.

Fees associated with a General Permit

Payment of the fee may be made by check or money order, payable to TCEQ, or through EPAY (electronic payment through the web).

Application Fee: This fee is required to be paid at the time the NOI is submitted. Failure to submit payment at the time the application is filed will cause delays in acknowledgment or denial of coverage under the general permit.

Mailed Payments:

Payment must be mailed under separate cover at one of the addresses below using the attached Application Fee submittal form. (DO NOT SEND A COPY OF THE NOI WITH THE APPLICATION FEE SUBMITTAL FORM)

BY REGULAR U.S. MAIL
Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
P.O. Box 13088
Austin, TX 78711-3088

BY OVERNIGHT/EXPRESS MAIL
Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, TX 78753

ePAY Electronic Payment: http://www.tceq.texas.gov/epay

When making the payment you must select Water Quality, and then select the fee category "General Permit Construction Storm Water Discharge NOI Application". You must include a copy of the payment voucher with your NOI. Your NOI will not be considered complete without the payment voucher.

INSTRUCTIONS FOR FILLING OUT THE NOI FORM

Renewal of General Permit. Dischargers holding active authorizations under the expired General Permit are required to submit a NOI to continue coverage. The existing permit number is required. If the permit number is not provided or has been terminated, expired, or denied a new permit number will be issued.

1. Operator (Applicant)

a) Enter assigned Customer Number (CN)
TCEQ's Central Registry will assign each customer a number that begins with CN, followed by nine digits. **This is not a permit number, registration number, or license number.**
If this customer has not been assigned a CN, leave the space for the CN blank.
If this customer has already been assigned this number, enter the permittee's CN.

b) Legal Name
Provide the current legal name of the permittee, as authorized to do business in Texas. The name must be provided exactly as filed with the Texas Secretary of State (SOS), or on other legal documents forming the entity, that is filed in the county where doing business. You may contact the SOS at 512/463-5555, for more information related to filing in Texas. If filed in the county where doing business, provide a copy of the legal documents showing the legal name.

c) Person Signing Application
Provide information about person signing section 5) Certification.

d) Operator Contact's (Responsible Authority) Contact Information and Mailing Address
Provide a complete mailing address for receiving mail from the TCEQ. The address must be verifiable with the US Postal Service at http://www.usps.com for regular mail delivery (not overnight express mail). If you find that the address is not verifiable using the USPS web search, please indicate the address is used by the USPS for regular mail delivery.

The area code and phone number should provide contact to the operator. Leave Extension blank if not applicable.

The fax number and e-mail address are optional and should correspond to the operator.

e) Type of Customer (Entity Type)
Check only one box that identifies the type of entity. Use the descriptions below to identify the appropriate entity type. Note that the selected entity type also indicates the name that must be provided as an applicant for a permit, registration or authorization.

Sole Proprietorship – DBA

A sole proprietorship is a customer that is owned by only one person and has not been incorporated. This business may:

- be under the person's name
- have its own name (doing business as or d.b.a.)
- have any number of employees

If the customer is a Sole Proprietorship or DBA, the 'legal name' of the individual business 'owner' must be provided. The DBA name is not recognized as the 'legal name' of the entity. The DBA name may be used for the site name (regulated entity).

Individual

An individual is a customer who has not established a business, but conducts an activity that needs to be regulated by the TCEQ.

Partnership

- A customer that is established as a partnership as defined by the Texas Secretary of State Office (TX SOS). A Limited Partnership or Limited Liability Partnership (Partnership) is required to file with the Texas Secretary of State. A General Partnership or Joint Venture is not required to register with the state.
- **Partnership (Limited Partnership or Limited Liability Partnership):** A limited partnership is defined in the Act as a partnership formed by two or more persons under the provisions of Section 3 of the Uniform Limited Partnership Act (Art. 6132a, Revised Civil Statutes of Texas) and having as members one or more general partners and one or more limited partners. The limited partners as such are not bound by the obligations of the partnership. Limited partners may not take part in the day-to-day operations of the business. A Limited Partnership must file with the Texas Secretary of State. A registered limited liability partnership is a general or limited partnership that is registered with the Texas Secretary of State. The partnership's name must contain the words "Registered Limited Liability Partnership" or the abbreviation "L.L.P." as the last words or letters of its name.
- **General Partnership:** A general partner may or may not invest, participates in running the partnership and is liable for all acts and debts of the partnership and any member of it. A General Partnership does not have limited partners. For a General Partnership, there is no registration with the state or even written agreement necessary for a general partnership to be formed. The legal definition of a partnership is generally stated as "an association of two or more persons to carry on as co-owners a business for profit" (Revised Uniform Partnership Act § 101 [1994]).
- **Joint Venture:** A joint venture is but another name for a special partnership. It might be distinguished from a general partnership in that the latter is formed for the transaction of a general business, while a joint venture is usually limited to a single transaction. That is, a joint venture is a special combination of persons in the nature of a partnership engaged in the joint prosecution of a particular transaction for mutual benefit or profit.

Corporation

A customer meets all of these conditions:

- is a legally incorporated entity under the laws of any state or country
- is recognized as a corporation by the Texas Secretary of State

- has proper operating authority to operate in Texas.
- The corporation's 'legal name' as filed with the Texas Secretary of State must be provided as applicant. An 'assumed' name of a corporation is not recognized as the 'legal name' of the entity.

Government

Federal, state, county, or city government (as appropriate)
The customer is either an agency of one of these levels of government or the governmental body itself. The government agency's 'legal name' must be provided as the applicant. A department name or other description of the organization should not be included as a part of the 'legal name' as applicant.

Trust or Estate

A trust and an estate are fiduciary relationships governing the trustee/executor with respect to the trust/estate property.

Other Government

A utility district, water district, tribal government, college district, council of governments, or river authority. Write in the specific type of government.

Other

The customer does not fit any of the above descriptions. Enter a short description of the type of customer in the blank provided.

f) Independent Entity

Check No if this customer is a subsidiary, part of a larger company, or is a governmental entity. Otherwise, check Yes.

g) Number of Employees

Check one box to show the number of employees for this customer's entire company, at all locations. This is not necessarily the number of employees at the site named in the application.

h) Customer Business Tax and Filing Numbers

These are required for Corporations and Limited Partnerships. These are not required for Individuals, Government, and Sole Proprietors.

State Franchise Tax ID Number

Corporations and limited liability companies that operate in Texas are issued a franchise tax identification number. If this customer is a corporation or limited liability company, enter this number here.

Federal Tax ID

All businesses, except for some small sole proprietors, individuals, or general partnerships should have a federal taxpayer identification number (TIN). Enter this number here. Use no prefixes, dashes, or hyphens. Sole proprietors, individuals, or general partnerships do not need to provide a federal tax ID.

TX SOS Charter (filing) Number

Corporations and Limited Partnerships required to register with the Texas Secretary of State are issued a charter or filing number. You may obtain further information by calling SOS at 512/463-5555.

DUNS Number
Most businesses have a DUNS (Data Universal Numbering System) number issued by Dun and Bradstreet Corp. If this customer has one, enter it here.

2. APPLICATION CONTACT

Provide the name, title and communication information of the person that TCEQ can contact for additional information regarding this application.

3. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE

a) Regulated Entity Reference Number (RN)
A number issued by TCEQ's Central Registry to sites (a location where a regulated activity occurs) regulated by TCEQ. This is not a permit number, registration number, or license number. If this regulated entity has not been assigned an RN, leave this space blank.

If the site of your business is part of a larger business site, a Regulated Entity Number (RN) may already be assigned for the larger site. Use the RN assigned for the larger site. Search TCEQ's Central Registry to see if the larger site may already be registered as a regulated site at: http://www12.tceq.texas.gov/crpub/index.cfm?fuseaction=regent.RNSearch

If the site is found, provide the assigned Regulated Entity Reference Number (RN) and provide the information for the site to be authorized through this application. The site information for this authorization may vary from the larger site information.

An example is a chemical plant where a unit is owned or operated by a separate corporation that is accessible by the same physical address of your unit or facility. Other examples include industrial parks identified by one common address but different corporations have control of defined areas within the site. In both cases, an RN would be assigned for the physical address location and the permitted sites would be identified separately under the same RN.

b) Site/Project Name/Regulated Entity
Provide the name of the site as known by the public in the area where the site is located. The name you provide on this application will be used in the TCEQ Central Registry as the Regulated Entity name.

c) Description of Activity Regulated
In your own words, briefly describe the primary business that you are doing that requires this authorization. Do not repeat the SIC Code description.

d) County
Identify the county or counties in which the regulated entity is located.

e) Latitude and Longitude
Enter the latitude and longitude of the site in degrees, minutes, and seconds or decimal form. For help obtaining the latitude and longitude, go to:
http://www.tceq.texas.gov/gis/sqmaview.html or http://nationalmap.gov/ustopo

f) Site/Project (RE) Physical Address/Location Information
Enter the complete address for the site in Section A if the address can be validated through the US Postal Service. If the physical address is not recognized as a USPS delivery address, you may need to validate the address with your local police (911 service) or through an online map site

used to locate a site. Please confirm this to be a complete and valid address. Do not use a rural route or post office box for a site location.

If a site does not have an address that includes a street (or house) number and street name, enter NO ADDRESS for the street name in Section A. In Section B provide a complete written location description. For example: "The site is located 2 miles west from intersection of Hwy 290 & IH35, located on the southwest corner of the Hwy 290 South bound lane."
Provide the city (or nearest city) and zip code of the facility location.

4. GENERAL CHARACTERISTICS

a) Indian Country Lands

If your site is located on Indian Country Lands, the TCEQ does not have authority to process your application. You must obtain authorization through EPA, Region 6, Dallas. Do not submit this form to TCEQ.

b) Construction activity associated with facility associated with exploration, development, or production of oil, gas, or geothermal resources

If your activity is associated with oil and gas exploration, development, or production, you may be under jurisdiction of the Railroad Commission of Texas and may need to obtain authorization from EPA Region 6. For more information, see:
http://info.sos.state.tx.us/pls/pub/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=16&pt=1&ch=3&rl=30

Construction activities associated with a facility related to oil, gas or geothermal resources may include the construction of a well site; treatment or storage facility; underground hydrocarbon or natural gas storage facility; reclamation plant; gas processing facility; compressor station; terminal facility where crude oil is stored prior to refining and at which refined products are stored solely for use at the facility; a carbon dioxide geologic storage facility; and a gathering, transmission, or distribution pipeline that will transport crude oil or natural gas, including natural gas liquids, prior to refining of such oil or the use of the natural gas in any manufacturing process or as a residential or industrial fuel.

Where required by federal law, discharges of stormwater associated with construction activities under the Railroad Commission's jurisdiction must be authorized by the EPA and the Railroad Commission of Texas, as applicable. Activities under Railroad Commission of Texas jurisdiction include construction of a facility that, when completed, would be associated with the exploration, development, or production of oil or gas or geothermal resources, such as a well site; treatment or storage facility; underground hydrocarbon or natural gas storage facility; reclamation plant; gas processing facility; compressor station; terminal facility where crude oil is stored prior to refining and at which refined products are stored solely for use at the facility; a carbon dioxide geologic storage facility under the jurisdiction of the Railroad Commission of Texas; and a gathering, transmission, or distribution pipeline that will transport crude oil or natural gas, including natural gas liquids, prior to refining of such oil or the use of the natural gas in any manufacturing process or as a residential or industrial fuel. The Railroad Commission of Texas also has jurisdiction over stormwater from land disturbance associated with a site survey that is conducted prior to construction of a facility that would be regulated by the Railroad Commission of Texas. Under 33 U.S.C. §1342(l)(2) and §1362(24), EPA cannot require a permit for discharges of stormwater from "field activities or operations associated with {oil and gas} exploration, production, processing, or treatment operations, or transmission facilities, including activities necessary to prepare a site for drilling and for the movement and placement

of drilling equipment, whether or not such field activities or operations may be considered to be construction activities" unless the discharge is contaminated by contact with any overburden, raw material, intermediate product, finished product, byproduct, or waste product located on the site of the facility. Under §3.8 of this title (relating to Water Protection), the Railroad Commission of Texas prohibits operators from causing or allowing pollution of surface or subsurface water. Operators are encouraged to implement and maintain best management practices (BMPs) to minimize discharges of pollutants, including sediment, in stormwater during construction activities to help ensure protection of surface water quality during storm events.

c) Primary Standard Industrial Classification (SIC) Code
Provide the SIC Code that best describes the construction activity being conducted at this site.

Common SIC Codes related to construction activities include:

- 1521 - Construction of Single Family Homes
- 1522 - Construction of Residential Bldgs. Other than Single Family Homes
- 1541 - Construction of Industrial Bldgs. and Warehouses
- 1542 - Construction of Non-residential Bldgs, other than Industrial Bldgs. and Warehouses
- 1611 - Highway and Street Construction, except Highway Construction
- 1622 - Bridge, Tunnel, and Elevated Highway Construction
- 1623 - Water, Sewer, Pipeline and Communications, and Power Line Construction

For help with SIC Codes, go to:
http://www.osha.gov/pls/imis/sicsearch.html

d) Secondary SIC Code
Secondary SIC Code(s) may be provided. Leave blank if not applicable. For help with SIC Codes, go to:
http://www.osha.gov/pls/imis/sicsearch.html

e) Total Number of Acres Disturbed
Provide the approximate number of acres that the construction site will disturb. Construction activities that disturb less than one acre, unless they are part of a larger common plan that disturbs more than one acre, do not require permit coverage. Construction activities that disturb between one and five acres, unless they are part of a common plan that disturbs more than five acres, do not require submission of an NOI. Therefore, the estimated area of land disturbed should not be less than five, unless the project is part of a larger common plan that disturbs five or more acres. Disturbed means any clearing, grading, excavating, or other similar activities.

If you have any questions about this item, please contact the stormwater technical staff by phone at (512)239-4671 or by email at swgp@tceq.texas.gov.

f) Common Plan of Development
Construction activities that disturb less than five acres do not require submission of an NOI unless they are part of a common plan of development or for sale where the area disturbed is five or more acres. Therefore, the estimated area of land disturbed should not be less than five, unless the project is part of a larger common plan that disturbs five or more acres. Disturbed means any clearing, grading, excavating, or other similar activities.

For more information on "What is a common plan of development?" go to: www.tceq.texas.gov/permitting/stormwater/common_plan_of_development_steps.html

For further information, go to the TCEQ stormwater construction webpage at: www.tceq.texas.gov/goto/construction and search for "Additional Guidance and Quick Links". If you have any further questions about this item, please call the stormwater technical staff at (512)239-4671.

g) Identify the water body(s) receiving stormwater runoff

The stormwater may be discharged directly to a receiving stream or through a MS4 from your site. It eventually reaches a receiving water body such as a local stream or lake, possibly via a drainage ditch. You must provide the name of the water body that receives the discharge from the site (a local stream or lake).

If your site has more than one outfall you need to include the name of the first water body for each outfall, if they are different.

h) Identify the segment number(s) of the classified water body(s)

Identify the classified segment number(s) receiving a discharge directly or indirectly. Go to the following link to find the segment number of the classified water body where stormwater will flow from the site: www.tceq.texas.gov/waterquality/monitoring/viewer.html

You may also find the segment number in TCEQ publication GI-316: www.tceq.texas.gov/publications/gi/gi-316

If the discharge is into an unclassified receiving water and then crosses state lines prior to entering a classified segment, select the appropriate watershed:

- 0100 (Canadian River Basin)
- 0200 (Red River Basin)
- 0300 (Sulfur River Basin)
- 0400 (Cypress Creek Basin)
- 0500 (Sabine River Basin)

Call the Water Quality Assessments section at (512)239-4671 for further assistance.

i) Discharge into MS4

The discharge may initially be into a municipal separate storm sewer system (MS4). The Construction General Permit requires the Operator to provide a copy of the NOI to the MS4 Operator.

j) Identify the MS4 Operator

If the stormwater discharge is into an MS4, provide the name of the entity that operates the MS4 where the stormwater discharges. An MS4 operator is often a city, town, county, or utility district, but possibly can be another form of government. Please note that the Construction General Permit requires the Operator to supply the MS4 with a copy of the NOI submitted to TCEQ. For assistance, you may call the technical staff at (512)239-4671.

k) Surface Water bodies on list of impaired waters

Indicate Yes or No if any surface water bodies receiving discharges from the construction site are on the latest EPA-approved CWA 303(d) List of impaired waters. The EPA-approved CWA

303(d) List of impaired waters in Texas can be found at:
www.tceq.texas.gov/waterquality/assessment/305_303.html

NOTE: Do not use any "draft" documents.

l) Identify the impaired water body(s)
Provide the name(s) of surface water bodies receiving discharges or potential discharges from the construction site that are on the latest EPA-approved CWA 303(d) List of impaired waters. The EPA-approved CWA 303(d) List of impaired waters in Texas can be found at:
www.tceq.texas.gov/waterquality/assessment/305_303.html

NOTE: Do not use any "draft" documents.

m) Discharges to the Edwards Aquifer Recharge Zone
See maps on the TCEQ website to determine if the site is located within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer at:
www.tceq.texas.gov/field/eapp/viewer.html

If the discharge or potential discharge is within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer, a site specific authorization approved by the Executive Director under the Edwards Aquifer Protection Program (30 TAC Chapter 213) is required before construction can begin.

The general permit requires the approved Contributing Zone Plan or Water Pollution Abatement Plan to be included or referenced as a part of the Stormwater Pollution Prevention Plan.

n) Certification regarding Edwards Aquifer Rule (30 TAC Chapter 213)
If the discharge or potential discharge is within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer as defined in 30 TAC Chapter 213, the certification must be answered "Yes" for coverage under the Construction General Permit. The TCEQ approved plan must be readily available for TCEQ staff to review at the time that the NOI is submitted.

For questions regarding the Edwards Aquifer Protection Program, contact the appropriate TCEQ Regional Office. For projects in Hays, Travis and Williamson Counties: Austin Regional Office, 12100 Park 35 Circle, Austin, TX 78753, 512-339-2929. For Projects in Bexar, Comal, Kinney, Medina and Uvalde Counties: TCEQ San Antonio Regional Office, 14250 Judson Rd., San Antonio, TX 78233-4480, 210-490-3096.

5. CERTIFICATIONS

Failure to indicate **Yes** to ALL of the certification items may result in denial of coverage under the general permit.

a) Certification of Understanding the Terms and Conditions of Construction General Permit (TXR150000)
Provisional coverage under the Construction General Permit (TXR150000) begins 7 days after the completed paper NOI is postmarked for delivery to the TCEQ. (Electronic applications submitted through ePermits have immediate provisional coverage). You must obtain a copy and read the Construction General Permit before submitting your application. You may view and print the Construction General Permit for which you are seeking coverage at the TCEQ web site: www.tceq.texas.gov/goto/construction

b) Certification of Legal Name
The full legal name of the applicant as authorized to do business in Texas is required. The name must be provided exactly as filed with the Texas Secretary of State (SOS), or on other legal documents forming the entity, that is filed in the county where doing business. You may contact the SOS at (512)463 5555, for more information related to filing in Texas.

c) Understanding of Notice of Termination
A permittee shall terminate coverage under this Construction General Permit through the submittal of a NOT when the operator of the facility changes, final stabilization has been reached, the discharge becomes authorized under an individual permit, or the construction activity never began at this site.

d) Certification of Stormwater Pollution Prevention Plan
The SWP3 identifies the areas and activities that could produce contaminated runoff at your site and then tells how you will ensure that this contamination is mitigated. For example, in describing your mitigation measures, your site's plan might identify the devices that collect and filter stormwater, tell how those devices are to be maintained, and tell how frequently that maintenance is to be carried out. You must develop this plan in accordance with the TCEQ general permit requirements. This plan must be developed and implemented before you complete this NOI. The SWP3 must be available for a TCEQ investigator to review on request.

Operator Certification:
The certification must bear an original signature of a person meeting the signatory requirements specified under 30 Texas Administrative Code (TAC) §305.44.

IF YOU ARE A CORPORATION:
The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(1) (see below). According to this code provision, any corporate representative may sign an NOI or similar form so long as the authority to sign such a document has been delegated to that person in accordance with corporate procedures. By signing the NOI or similar form, you are certifying that such authority has been delegated to you. The TCEQ may request documentation evidencing such authority.

IF YOU ARE A MUNICIPALITY OR OTHER GOVERNMENT ENTITY:
The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(3) (see below). According to this code provision, only a ranking elected official or principal executive officer may sign an NOI or similar form. Persons such as the City Mayor or County Commissioner will be considered ranking elected officials. In order to identify the principal executive officer of your government entity, it may be beneficial to consult your city charter, county or city ordinances, or the Texas statute(s) under which your government entity was formed. An NOI or similar document that is signed by a government official who is not a ranking elected official or principal executive officer does not conform to §305.44(a)(3). The signatory requirement may not be delegated to a government representative other than those identified in the regulation. By signing the NOI or similar form, you are certifying that you are either a ranking elected official or principal executive officer as required by the administrative code. Documentation demonstrating your position as a ranking elected official or principal executive officer may be requested by the TCEQ.

If you have any questions or need additional information concerning the signatory requirements discussed above, please contact the Texas Commission on Environmental Quality's Environmental Law Division at (512)239-0600.

30 Texas Administrative Code

§305.44. Signatories to Applications

(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

Texas Commission on Environmental Quality
General Permit Payment Submittal Form

Use this form to submit your Application Fee only if you are mailing your payment.

- Complete items 1 through 5 below:
- Staple your check in the space provided at the bottom of this document.
- Do not mail this form with your NOI form.
- Do not mail this form to the same address as your NOI.

Mail this form and your check to:

BY REGULAR U.S. MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
P.O. Box 13088
Austin, TX 78711-3088

BY OVERNIGHT/EXPRESS MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, TX 78753

Fee Code: GPA	General Permit: TXR150000

1. Check / Money Order No: _____
2. Amount of Check/Money Order: _____
3. Date of Check or Money Order: _____
4. Name on Check or Money Order: _____
5. NOI INFORMATION

   If the check is for more than one NOI, list each Project/Site (RE) Name and Physical Address exactly as provided on the NOI. DO NOT SUBMIT A COPY OF THE NOI WITH THIS FORM AS IT COULD CAUSE DUPLICATE PERMIT ENTRIES.

   See Attached List of Sites (If more space is needed, you may attach a list.)

   Project/Site (RE) Name: _____

   Project/Site (RE) Physical Address:

Staple Check in This Space

Notice of Change (NOC) to an Authorization for Stormwater Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)

TCEQ Office Use Only
Permit No.:
RN:
CN:

RESET FORM

******* IMPORTANT *******

PLEASE READ THE FOLLOWING INFORMATION AND INSTRUCTIONS BEFORE FILLING OUT THIS FORM.

The form will be returned for one of the following reasons:

1) the permit number is not provided, invalid, or no longer active,
2) a wet ink signature of person meeting signatory requirements for permittee is not provided,
3) the current permittee is not the applicant, and;
4) a requested change in operator name is not a legal name change .

THIS FORM CANNOT BE USED FOR A CHANGE IN OPERATOR. REFER TO YOUR GENERAL PERMIT.

What is the **Permit Number** of the authorization to be changed?	**TXR15**

A. APPLICANT INFORMATION:

Search Central Registry at www12.tceq.texas.gov/crpub/

1. Operator (Permittee)

a. What is the full Legal Name of the current Operator as on the authorization?

b. What is the TCEQ Central Registry Customer Number assigned to this Operator?	**CN**

2. Permitted Site (required)

What is the TCEQ Central Registry Regulated Entity Number assigned for this permitted site?	**RN**

B. REQUESTED CHANGE TO PERMITTED INFORMATION

What information has changed or needs corrected?
(Check one or more of the sections being updated and enter the new information in the corresponding section of this form.)

- ☐ Operator Legal Name Change with Texas Secretary of State (TX SOS). Go to Section 1 &/or 2 as applicable.
  (Note: Permits are not transferable. If a change in entity has occurred, this NOC is not attainable.)
- ☐ Address and contact information for Operator, Billing for Annual Fee, or Discharge Monitoring Report forms.
- ☐ Site Information (Regulated Entity)
  (Note: Permits under a general permit are site specific. If a change in site location has occurred, this NOC is not attainable.)
- ☐ General Characteristics relating to the regulated activity.

1. OPERATOR LEGAL NAME CHANGE

a. What is the NEW active Legal Name with TX SOS or on other legal document?

New Legal Name:

b. What is the TX SOS Filing Number for us to confirm this official name change? (This is only applicable to Limited Partnership or Corporations.)	

2. ADDRESS & CONTACT INFORMATION CHANGE

a. What mailing address and/or contact information has changed? (check one or more as applicable)

☐ Operator for permit correspondence	☐ Site (RE) Mailing Address and contact information
☐ Billing address/contact for Receiving Annual Fee Statement	☐ Reporting address/contact for Receiving Discharge Monitoring Reports (DMRs)

b. If you selected more than one, is the information to be updated the same for each selection?

- ☐ Yes – Provide the updated information in the fields below.
- ☐ No – Attachment 1 of the NOC is attached to this form, to provide the different addresses.

ATTN or C/O:		
Address:	Suite No./Bldg. No./Mail Code:	
City:	State:	ZIP Code:
Country Mailing Information (if outside USA).	Country Code:	Postal Code:
Phone No.: ( ) Ext:	Fax No.: ( )	E-Mail:

3. REGULATED ENTITY (RE) SITE INFORMATION CORRECTION		
a. Is this a change to the location of the permitted activity? ☐ Yes - this requested change will not be processed since the authorizations are site specific. ☐ No – go to next question.		
b. New or Corrected Name of Project or Site :		
c. Updated Physical Address (new 911 address):		
Street Number:	Street Name:	Bldg/Ste No.
City:	ZIP Code:	County (Counties if >1):
d. Update or Corrected location access description, if no physical address (Street Number & Street Name):		
e. Corrected Latitude: _____ N	Corrected Longitude: _____ W	

4. CHANGE IN CHARACTERISTICS PROVIDED ON ORIGINAL FORM
Identify the specific change and provide the updated information. If an attachment is need, please reference it below.

C. APPLICATION CONTACT

If TCEQ needs additional information regarding this application, who should be contacted?

1. Name:	Title:	Company:
2. Phone No.: ( ) Ext:	Fax No.: ( )	E-Mail:

D. CERTIFICATION

Operator Certification:

I, _____ _____
Typed or printed name (REQUIRED) Title (REQUIRED)

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under **30 Texas Administrative Code §305.44** to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signature: _____ Date: _____
(Use blue ink) (REQUIRED) (REQUIRED)

Attachment 1 to a NOC Form for Providing Different Address & Contact Information Related to a Specific Permit under General Permit TXR150000

What is the Permit No.? **TXR15** _____
(REQUIRED)

ADDITIONAL ADDRESS & CONTACT INFORMATION

Fill in the changes as applicable. Incomplete and invalid addresses will not be used. Verify mailing addresses at USPS.com.

Operator		
ATTN or C/O:		
Address:	Suite No./Bldg. No./Mail Code:	
City:	State:	ZIP Code:
Country Mailing Information (if outside USA).	Country Code:	Postal Code:
Phone No.: ( ) Ext:	Fax No.: ( )	E-Mail:

Billing Address for Receiving Annual Fee Statement		
ATTN or C/O:		
Address:	Suite No./Bldg. No./Mail Code:	
City:	State:	ZIP Code:
Country Mailing Information (if outside USA).	Country Code:	Postal Code:
Phone No.: ( ) Ext:	Fax No.: ( )	E-Mail:

Site (RE) Mailing Address		
ATTN or C/O:		
Address:	Suite No./Bldg. No./Mail Code:	
City:	State:	ZIP Code:
Country Mailing Information (if outside USA).	Country Code:	Postal Code:
Phone No.: ( ) Ext:	Fax No.: ( )	E-Mail:

Notice of Change (NOC) to an Authorization for Stormwater Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)

General Information and Instructions

GENERAL INFORMATION

Where to Send the Notice of Change (NOC):

BY REGULAR U.S. MAIL
Texas Commission on Environmental Quality
Stormwater Processing Center (MC228)
P.O. Box 13087
Austin, TX 78711-3087

BY OVERNIGHT/EXPRESS MAIL
Texas Commission on Environmental Quality
Stormwater Processing Center (MC228)
12100 Park 35 Circle
Austin, TX 78753

TCEQ Contact list:

Application Processing Questions relating to the status and form requirements: 512/239-3700 or email swpermit@tceq.texas.gov
Technical Questions relating to the general permit: 512/239-4671
Environmental Law Division: 512/239-0600
Records Management for obtaining copies of forms submitted to TCEQ: 512/239-0900
Information Services for obtaining reports from program data bases (as available): 512/239-DATA (3282)
Financial Administration's Cashier's office: 512/239-0357 or 512/239-0187

Notice of Change Process:

When your NOC is received by the program, the form will be processed as follows:

1. **Administrative Review:** The form will be reviewed to ensure the request is from the permittee (operator) on the authorization, the permit is active and initial coverage was acknowledged. Each item on the form will be reviewed for a complete response that qualifies for a NOC. In addition, the operator's legal name change must be verified with Texas Secretary of State (if applicable). The address(s) on the form must be verified with the US Postal service as an address receiving regular mail delivery. Never give an overnight/express mailing address.

If an item is incomplete or not verifiable as indicated above, the operator **may** be notified by letter, phone call or email. In some instances as noted at the beginning of the form, the request may simply be returned.

2. **NOC Confirmation:** An updated Acknowledgment Certificate will be mailed to the operator **only** if the NOC is to change information provided on the acknowledgment certificate. The original coverage effective date will not change.

General Permit (Your Permit)
You may view and print your general permit on the TCEQ web site www.tceq.texas.gov.
Enter the general permit number as the key word in the search box to locate the specific web page.

General Permit Forms
The Notice of Intent (NOI), Notice of Termination (NOT), and Notice of Change (NOC) with instructions are available in Adobe Acrobat PDF format on the TCEQ web site www.tceq.texas.gov.

Change in Operator
An authorization under the general permit is not transferable. If the operator of the regulated entity changes, the present permittee must submit a Notice of Termination and the new operator must submit a Notice of Intent. The NOI must be submitted not later than 10 days prior to the change in Operator status. Note that the NOT is effective on the postmarked date. It may be necessary to not terminate the existing permit until coverage by the new entity is confirmed.

TCEQ Central Registry Core Data Form
The Core Data Form has been incorporated into this form. **Do not send a core data form to TCEQ.**

You can find the information on the Central Registry web site at www12.tceq.texas.gov/crpub/. You can search by the Regulated Entity (RN), Customer Number (CN) or Name (Permittee), or by your permit number under the search field labeled "Additional ID".

The Customer (Permittee) is responsible for providing consistent information to the TCEQ, and for updating all CN and RN data for all associated authorizations as changes occur. For General Permits, a Notice of Change form must be submitted to the program area for approval to update the CN and RN data in central registry.

INSTRUCTIONS FOR FILLING OUT THE NOC FORM

A. Applicant Information (Operator)

1. Provide the current permittee(s) full legal name as on the permit.
b. Provide the TCEQ Issued Customer Number (CN) for the entity.
Go to http://www12.tceq.texas.gov/crpub/ to locate your CN.

If the name(s) provided do not match the current permittee name(s), this form will be returned. It is the responsibility of the permittee(s) to comply with the general permit.

Note: If a change is being made to the CN and the CN has other TCEQ authorization types, it is the entity's responsibility to update those authorizations at the same time. If an authorization has been cancelled or terminated, the name can not be changed on the permit. Because of this, a new CN may be issued for the new name.

2. Provide the TCEQ Issued Regulated Entity number assigned for this permitted activity.
Go to http://www12.tceq.texas.gov/crpub/ to locate your CN.

If the site has changed or the information provided indicates a new location, this form will be returned. It is the responsibility of the (permittees) to comply with the general permit.

B. REQUESTED CHANGE TO PERMITTED INFORMATION

Check one or more of the available options indicating the information in the form that is to be updated. Provide the updated information in Section 1 for Legal Name Change, Section 2 for Address & Contact Information Change, Section 3 for Regulated Entity Site Information Change, or Section 4 for General Characteristics Change, as applicable.

1. LEGAL NAME CHANGE

Provide the new legal name. If the entity is a Limited Partnership or Corporation, the name change must be verifiable with Texas Secretary of State. The TX SOS filing number must be provided to verify only a name change occurred. You may contact the SOS at 512/463-5555, for more information related to filing in Texas. If filed in the county where doing business, provide a copy of the legal documents showing the legal name change.

Legal name changes of a Corporation and Limited Partnership will be verified with Texas Secretary of State. If the entity is filed as a new entity with a new filing number, then the change cannot be made through a NOC. The permits are not transferable. If the operator changes, the old entity must terminate their permit and the new entity must submit a form for a new permit.

2. ADDRESS & CONTACT INFORMATION CHANGE

Indicate the type of address and contact information that has changed from the original NOI or last NOC submitted to TCEQ.
If the address and/or contact information is the same for all types, then check each type and enter the information in the fields on the form. If some types have different information, then use the NOC ATTACHMENT 1. The permit number MUST be written on ATTACHMENT 1 to indicate it is a part of the NOC form for the permit being updated. The updates cannot be made without reference to the submitted NOC form.

Mailing Address
The address **MUST BE** verifiable with the US Postal Service at www.usps.com., for regular mail delivery (not overnight express mail). If you find that the address is not verifiable using the USPS web search, please indicate the address is used by the USPS for regular mail delivery. Failure to provide a valid mailing address will delay or prohibit us from updating the permit.

Please note that address updates relating to a general permit authorization can ONLY be made through a Notice of Change. Address changes submitted through any other form can not be processed.

3. REGULATED ENTITY (RE) SITE INFORMATION CORRECTION

The NOC form is only for use to update or correct information submitted on the original application or last NOC for the authorization. The authorization under a general permit is site specific. If this change is related to a new location, a Notice of Change is not attainable.

Provide the updated site name , updated site addresses, and/or corrected latitude and longitude, as applicable to your NOC request.
A new physical address for an existing location is usually the result of a newly assigned 911 address for emergencies.

If providing a corrected latitude and longitude, enter the latitude and longitude of the site in either degrees, minutes, and seconds or decimal form. For help obtaining the latitude and longitude, go to: www.tceq.state.tx.us/gis/drgview.html or www.terraserver.microsoft.com/advfind.aspx.

4. GENERAL CHARACTERISTIC

Indicate the change to information originally supplied. For example if the number of acreas of area disturbed has changed, then state: "The number acres of area disturbed has increase to 40 acres."

C. Application Contact

Provide the name, title and communication information of the person that TCEQ can contact for additional information regarding this application.

D. CERTIFICATIONS

The certification must bear an original signature of a person meeting the signatory requirements specified under 30 Texas Administrative Code (TAC) §305.44.

IF YOU ARE A CORPORATION:

The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(1) (see below). According to this code provision, any corporate representative may sign an NOI or similar form so long as the authority to sign such a document has been delegated to that person in accordance with corporate procedures. By signing the NOI or similar form, you are certifying that such authority has been delegated to you. The TCEQ may request documentation evidencing such authority.

IF YOU ARE A MUNICIPALITY OR OTHER GOVERNMENT ENTITY:

The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(3) (see below). According to this code provision, only a ranking elected official or principal executive officer may sign an NOI or similar form. Persons such as the City Mayor or County Commissioner will be considered ranking elected officials. In order to identify the principal executive officer of your government entity, it may be beneficial to consult your city charter, county or city ordinances, or the Texas statute(s) under which your government entity was formed. An NOI or similar document that is signed by a government official who is not a ranking elected official or principal executive officer does not conform to §305.44(a)(3). The signatory requirement may not be delegated to a government representative other than those identified in the regulation. By signing the NOI or similar form, you are certifying that you are either a ranking elected official or principal executive officer as required by the administrative code. Documentation demonstrating your position as a ranking elected official or principal executive officer may be requested by the TCEQ.

If you have any questions or need additional information concerning the signatory requirements discussed above, please contact the Texas Commission on Environmental Quality's Environmental Law Division at 512/239-0600.

30 Texas Administrative Code
§305.44. Signatories to Applications.

(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

Notice of Termination (NOT) for Authorizations under TPDES General Permit TXR150000

TCEQ Office Use Only
Permit No.:
RN:
CN:

Reset Form

Sign up now for on line NOT at https://www6.tceq.texas.gov/steers/
Get your NOT Confirmation letter immediately after submitting the on line NOT form.

What is the permit number to be terminated?
Processing will be delayed without the permit number. TXR15_____

A. OPERATOR (applicant)

1. What is the Customer Number (CN) issued to this entity? **CN**
2. What is the full Legal Name of the current permittee?

This must be the current permittee of the permit to be terminated.

3. What is the applicant's mailing address as recognized by the **US Postal Service**?

Address:	Suite No./Bldg. No./Mail Code:	
City:	State:	ZIP Code:
Country Mailing Information (if outside USA).	Country Code:	Postal Code:

4. Phone No.: ( )	Extension:
5. Fax No.: ( )	E-mail Address:

B. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE

1. What is the TCEQ Issued RE Reference Number (RN)? **RN**
2. Name of Project or Site as currently permitted):

(example: phase and name of subdivision or name of project that's unique to the site)

3. Physical Address of Project or Site as currently permitted: (enter in spaces below)

Street Number:	Street Name:	
City:	ZIP Code:	County (Counties if >1):

4. If no physical address (Street Number & Street Name), provide the written location access description to the site:

C. REASON FOR TERMINATION

Check the reason for termination:

- ☐ Final stabilization has been achieved on all portions of the site that are the responsibility of the Operator and all silt fences and other temporary erosion controls have either been removed, or scheduled for removal as defined in the SWP3.
- ☐ Another permitted Operator has assumed control over all areas of the site that have not been finally stabilized, and temporary erosion controls that have been defined in the SWP3 have been transferred to the new Operator.
- ☐ The activity is now authorized under an alternate TPDES permit.
- ☐ The activity never began at this site that is regulated under the general permit.

D. CERTIFIC ATION

I, _____ _____
Typed or printed name Title

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under **30 Texas Administrative Code §305.44** to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signature:_____ Date:_____
(Use blue ink)

Notice of Termination (NOT) for Authorizations under TPDES General Permit TXR150000 General Information and Instructions

GENERAL INFORMATION

Where to Send the Notice of Intent (NOI):

BY REGULAR U.S. MAIL
Texas Commission on Environmental Quality
Stormwater Processing Center (MC228)
P.O. Box 13087
Austin, TX 78711-3087

BY OVERNIGHT/EXPRESS MAIL
Texas Commission on Environmental Quality
Stormwater Processing Center (MC228)
12100 Park 35 Circle
Austin, TX 78753

TCEQ Contact list:

Application Processing Questions relating to the status and form requirements:	512/239-3700 or swpermit@tceq.texas.gov
Technical Questions relating to the general permit:	512/239-4671
Environmental Law Division:	512/239-0600
Records Management for obtaining copies of forms submitted to TCEQ:	512/239-0900
Information Services for obtaining reports from program data bases (as available):	512/239-DATA (3282)
Financial Administration's Cashier's office:	512/239-0357 or 512/239-0187

Notice of Termination Process:

A Notice of Termination is **effective on the date postmarked for delivery to TCEQ**.
When your NOT is received by the program, the form will be processed as follows:

1. **Administrative Review:** The form will be reviewed to confirm the following:
   - the permit number is provided
   - the permit is active and has been approved
   - the entity terminating the permit is the current permittee
   - the site information matches the original permit record
   - the form has the required original signature with title and date

2. **Notice of Deficiency:** If an item is incomplete or not verifiable as indicated above, a phone call will be made to the applicant to clear the deficiency. A letter will not be sent to the permittee if unable to process the form.

3. **Confirmation of Termination:** A Notice of Termination Confirmation letter will be mailed to the operator.

General Permit (Your Permit)
Coverage under the general permit begins **48 hours after a completed NOI is postmarked for delivery to** the TCEQ. You should have a copy of your general permit when submitting your application. You may view and print your permit for which you are seeking coverage, on the TCEQ web site www.tceq.texas.gov

General Permit Forms
The Notice of Intent (NOI), Notice of Termination (NOT), and Notice of Change (NOC) with instructions are available in Adobe Acrobat PDF format on the TCEQ web site www.tceq.texas.gov.

Change in Operator
An authorization under the general permit is not transferable. If the operator or owner of the regulated entity changes, the present permittee must submit a Notice of Termination and the new operator must submit a Notice of Intent. The NOT and NOI must be submitted not later than 10 days prior to the change in Operator status.

TCEQ Central Registry Core Data Form
The Core Data Form has been incorporated into this form. **Do not send a core data form to TCEQ.**

After final acknowledgment of coverage under the general permit, the program will assign a Customer Number (CN) and Regulated Entity Number (RN). For Construction Permits, a new RN will be assigned for each Notice of Intent filed with TCEQ, since construction project sites can overlap with other Customers. The RN assigned to your construction project will not be assigned to any other TCEQ authorization.

You can find the information on the Central Registry web site at www12.tceq.texas.gov/crpub/. You can search by the Regulated Entity (RN), Customer Number (CN) or Name (Permittee), or by your permit number under the search field labeled "Additional ID". Capitalize all letters in the permit number.

The Customer (Permittee) is responsible for providing consistent information to the TCEQ, and for updating all CN and RN data for all authorzations as changes occur. For General Permits, a Notice of Change form must be submitted to the program area.

Annual Water Quality Fee: This fee is assessed to operators with an active authorization under the general permit on September 1 of each year. The operator will receive an invoice for payment of the annual fee in November of each year. The payment will be due 30 days from the invoice date. A 5% penalty will be assessed if the payment is received by TCEQ after the due date. Annual fee assessments cannot be waived as long as the authorization under the general permit is active on September 1.

It's important for the operator to submit a **Notice of Termination** (NOT) when coverage under the general permit is no longer required. A NOT is effective on the postmarked date of mailing the form to TCEQ. It is recommended that the NOT be mailed using a method that documents the date mailed and received by TCEQ.

- Mailed Payments:

You must return your payment with the billing coupon provided with the billing statement.

- ePAY Electronic Payment:

Go to www6.tceq.texas.gov/epay/
You must enter your account number provided at the top portion of your billing statement. Payment methods include Mastercard, Visa, and electronic check payment (ACH). A transaction over $500 can only be made by ACH.

INSTRUCTIONS FOR FILLING OUT THE NOT FORM

A. OPERATOR (current permittee.)

1. TCEQ Issued Customer Number (CN)

2. Legal Name of Operator
The operator must be the same entity as previously submitted on the original Notice of Intent for the permit number provided.

3. Operator Mailing Address
Provide a complete mailing address for receiving mail from the TCEQ. Update the address if different than previously submitted in the Notice of Intent or Notice of Change.

4. Phone Number, Fax Number, and E-mail Address
Provide updated contact information.

B. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE

1. Regulated Entity Reference Number (RN)

2. Site/Project Name/Regulated Entity
Provide the name of the site as previously submitted in the Notice of Intent for the permit number provided.

3. Site/Project (RE) Physical Address
Provide the physical address or location access description as previously submitted for the permit number provided.

C. REASON FOR TERMINATION

Indicate the reason for terminating the permit by checking one of the options. If the reason is not listed then provide an attachment that explains the reason for termination.

Please read your general permit carefully to determine when to terminate your permit. Permits will not be reactivated after submitting a termination form. The termination is effective on the date postmarked for delivery to TCEQ.

D. CERTIFICATIONS

The certification must bear an original signature of a person meeting the signatory requirements specified under 30 Texas Administrative Code (TAC) §305.44.

IF YOU ARE A CORPORATION:

The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(1) (see below). According to this code provision, any corporate representative may sign an NOI or similar form so long as the authority to sign such a document has been delegated to that person in accordance with corporate procedures. By signing the NOI or similar form, you are certifying that such authority has been delegated to you. The TCEQ may request documentation evidencing such authority.

IF YOU ARE A MUNICIPALITY OR OTHER GOVERNMENT ENTITY:

The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(3) (see below). According to this code provision, only a ranking elected official or principal executive officer may sign an NOI or similar form. Persons such as the City Mayor or County Commissioner will be considered ranking elected officials. In order to identify the principal executive officer of your government entity, it may be beneficial to consult your city charter, county or city ordinances, or the Texas statute(s) under which your government entity was formed. An NOI or similar document that is signed by a government official who is not a ranking elected official or principal executive officer does not conform to

§305.44(a)(3). The signatory requirement may not be delegated to a government representative other than those identified in the regulation. By signing the NOI or similar form, you are certifying that you are either a ranking elected official or principal executive officer as required by the administrative code. Documentation demonstrating your position as a ranking elected official or principal executive officer may be requested by the TCEQ.

If you have any questions or need additional information concerning the signatory requirements discussed above, please contact the Texas Commission on Environmental Quality's Environmental Law Division at 512/239-0600.

30 Texas Administrative Code
§305.44. Signatories to Applications.

(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

APPENDIX I

RECORD OF TEMPORARY/PERMANENT CEASING OF CONSTRUCTION ACTIVITIES

Record of Temporary/Permanent Ceasing of Construction Activities

Project Activity Area	Date Activities Ceased	Temporary* or Permanent	Date Soil Stabilization Implemented	Date Activities Resumed	Initials

*** "Temporarily Ceased" means inactive for less than 21 consecutive days.**

APPENDIX J

DELEGATION OF SIGNATORIES

Executive Director
Texas Commission on Environmental Quality
Storm Water and Pretreatment Team
P.O. Box 13087, MC-148
Austin, TX 78711-3087

Subject: Delegation of Signatories to Reports

Facility/Company/Site Name: _____
TPDES Permit Number: _____

Dear Executive Director:

This letter serves to designate the following people or positions as authorized personnel for signing reports, storm water pollution prevention plans, certifications or other information requested by the Executive Director or required by the general permit, as set forth by 30 TAC §305.128 (see page 2).

Name or Position	
Name or Position	
Name or Position	
Name or Position	

I understand that this authorization does not extend to the signing of a Notice of Intent for obtaining coverage under a storm water general permit.

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in 30 TAC §305.44 (see page 2).

Sincerely,

_____ _____ _____
Name Title Date

RELEVANT PROVISIONS

305.128(a) All reports requested by permits and other information requested by the executive director shall be signed by a person described in §305.44(a) of this title (relating to Signatories to Applications) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) the authorization is made in writing by a person described in §305.44(a) of this title (relating to Signatories to Applications);

(2) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity or for environmental matters for the applicant, such as the position of plant manager, operator of a well or well field, environmental manager, or a position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

(3) the written authorization is submitted to the executive director.

(b) If an authorization under this section is no longer accurate because of a change in individuals or position, a new authorization satisfying the requirements of this section must be submitted to the executive director prior to or together with any reports, information, or applications to be signed by an authorized representative.

(c) Any person signing a report required by a permit shall make the certification set forth in §305.44(b) of this title (relating to Signatories to Applications).

305.44(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

(b) A person signing an application shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

APPENDIX K

MATERIAL MANAGEMENT PRACTICES

MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce risk of spills or other accidental exposure of materials and substances to storm water runoff:

1. Good Housekeeping: The following good housekeeping practices will be followed onsite during the construction project:
   - An effort will be made to store only enough product required to do the job.
   - All materials stored on-site will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
   - Products will be kept in their original containers with the original manufacturer's label.
   - Substances will not be mixed with one another unless recommended by the manufacturer.
   - Whenever possible, all of a product will be used up before disposing of the container.
   - Manufacturers' recommendations for proper use and disposal will be followed.
   - Designated areas for equipment maintenance and repair (control of oil, grease and fuel spills).
   - Waste receptacles with regular collection for litter and construction debris.
   - Equipment washdown area on-site with appropriate control of wash waters (including concrete truck wash down).
   - Protected storage areas for chemicals, paints, solvents, fertilizers and other potentially toxic materials.
   - Adequately maintained sanitary facilities.
   - Proper control of raw materials stored on-site (for example, sand, aggregate and cement used in the manufacture of concrete or stockpiles of topsoil).
   - Street sweeping or cleaning.
   - Removal of inlet protection barriers during major rainfall events if flooding occurs and verification that reinforced filter fabric fences are in proper condition prior to all rainfall events.
   - The site superintendent will ensure proper use and disposal of materials onsite.
2. Hazardous Products: The following practices are used to reduce the risks associated with hazardous materials.
   - Products will be kept in original containers unless they are not re-sealable.
   - Paints, solvents, fertilizer, fuel (small containers), and other stored chemical substances will be kept within an enclosure to protect the containers and the floor of the enclosure, from wind, precipitation, and storm water runoff.
   - Fuel storage and filling areas will be bermed off to provide collection of any spills and prevent exposure to storm water runoff.
   - Original labels and Material Safety Data Sheets (MSDS) will be retained on-site and available for review by workers.
   - If surplus product must be disposed of, manufacturers' or local and State recommended methods for proper disposal will be followed.

PRODUCT SPECIFIC PRACTICES

The following product specific practices will be followed onsite:

1. Petroleum Products: All onsite vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.
2. Fertilizers: Fertilizers used will be applied only in the minimum amounts recommended by the manufacturer. Storage will be in a covered shed.
3. Paints: All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system but will be properly disposed of according to manufacturers' instructions or State and local regulations.
4. Concrete Trucks: Discharges of concrete truck wash out at construction sites may be authorized if conducted in accordance with the requirements of Part V of the general permit.

SPILL CONTROL PRACTICES

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- Manufacturers' recommended methods for spill cleanup will be maintained on-site in the material data sheets (MSDS) and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- Contact the MS4 Operator, TCEQ (800-832-8224), and the National Response Center (800-424-8802) to inform of any spill of toxic or hazardous material regardless of the size.

The spill prevention plan will be adjusted to include measures to prevent this type of spill from recurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.

APPENDIX L

NON-STORM WATER DISCHARGE INVENTORY

NON-STORM WATER DISCHARGE INVENTORY

Mark the materials or substances listed below expected to be present onsite during construction:

☐ Concrete	☐ Detergents	☐ Paints (enamel/latex)
☐ Metal Studs	☐ Fuels	☐ Lubricants
☐ Fertilizers	☐ Petroleum Based Products	☐ Cleaning Solvents
☐ Masonry Block	☐ Electrical Equipment and Materials	☐ Asphalt and Asphalt Related Products
☐ Tar	☐ Roof Shingles	☐ Wood
☐ Steel Products	☐ _____	☐ _____
☐ _____	☐ _____	☐ _____

AUTHORIZED NON STORMWATER DISCHARGES ANTICIPATED DURING THE PROJECT

Mark the following non-storm water discharges expected to occur from the site during the construction period (refer to general permit in Appendix G for additional information):

- ☐ discharges from firefighting activities,
- ☐ uncontaminated fire hydrant flushings, which include flushings from systems that utilize potable water, surface water, or groundwater that does not contain additional pollutants,
- ☐ water from the routine external washing of vehicles, the external portion of buildings or structures, and pavement, where detergents and soaps are not used and where spills or leaks of toxic or hazardous materials have not occurred and where the purpose is to remove mud, dirt, or dust,
- ☐ uncontaminated water used to control dust,
- ☐ potable water sources including waterline flushings,
- ☐ uncontaminated air conditioning condensate,
- ☐ uncontaminated ground water or spring water, including foundation or footing drains where flows are not contaminated with industrial materials such as solvents,
- ☐ lawn watering and similar irrigation drainage,
- ☐ runoff from concrete batch plants (refer to Part IV of general permit),
- ☐ concrete truck wash out (refer to Part V of general permit).

APPENDIX M

REPORTABLE QUANTITIES OF HAZARDOUS SUBSTANCES

Each substance in Table 117.3 that is listed in Table 302.4, 40 CFR part 302, is assigned the reportable quantity listed in Table 302.4 for that substance.

TABLE 117.3 -- REPORTABLE QUANTITIES OF HAZARDOUS SUBSTANCES DESIGNATED PURSUANT TO SECTION 311 OF THE CLEAN WATER ACT

Note: The first number under the column headed "RQ" is the reportable quantity in pounds. The number in parentheses is the metric equivalent in kilograms. For convenience, the table contains a column headed "Category" which lists the code letters "X", "A", "B", "C", and "D" associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds, respectively.

Table 117.3_Reportable Quantities of Hazardous Substances Designated Pursuant to Section 311 of the Clean Water Act

Material	Category	RQ in pounds (kilograms)
Acetaldehyde	C	1,000 (454)
Acetic acid	D	5,000 (2,270)
Acetic anhydride	D	5,000 (2,270)
Acetone cyanohydrin	A	10 (4.54)
Acetyl bromide	D	5,000 (2,270)
Acetyl chloride	D	5,000 (2,270)
Acrolein	X	1 (0.454)
Acrylonitrile	B	100 (45.4)
Adipic acid	D	5,000 (2,270)
Aldrin	X	1 (0.454)
Allyl alcohol	B	100 (45.4)
Allyl chloride	C	1,000 (454)
Aluminum sulfate	D	5,000 (2,270)
Ammonia	B	100 (45.4)
Ammonium acetate	D	5,000 (2,270)
Ammonium benzoate	D	5,000 (2,270)
Ammonium bicarbonate	D	5,000 (2,270)
Ammonium bichromate	A	10 (4.54)
Ammonium bifluoride	B	100 (45.4)
Ammonium bisulfite	D	5,000 (2,270)
Ammonium carbamate	D	5,000 (2,270)
Ammonium carbonate	D	5,000 (2,270)
Ammonium chloride	D	5,000 (2,270)
Ammonium chromate	A	10 (4.54)
Ammonium citrate dibasic	D	5,000 (2,270)
Ammonium fluoborate	D	5,000 (2,270)
Ammonium fluoride	B	100 (45.4)
Ammonium hydroxide	C	1,000 (454)
Ammonium oxalate	D	5,000 (2,270)
Ammonium silicofluoride	C	1,000 (454)
Ammonium sulfamate	D	5,000 (2,270)
Ammonium sulfide	B	100 (45.4)
Ammonium sulfite	D	5,000 (2,270)
Ammonium tartrate	D	5,000 (2,270)
Ammonium thiocyanate	D	5,000 (2,270)
Amyl acetate	D	5,000 (2,270)
Aniline	D	5,000 (2,270)

Antimony pentachloride	C	1,000 (454)
Antimony potassium tartrate	B	100 (45.4)
Antimony tribromide	C	1,000 (454)
Antimony trichloride	C	1,000 (454)
Antimony trifluoride	C	1,000 (454)
Antimony trioxide	C	1,000 (454)
Arsenic disulfide	X	1 (0.454)
Arsenic pentoxide	X	1 (0.454)
Arsenic trichloride	X	1 (0.454)
Arsenic trioxide	X	1 (0.454)
Arsenic trisulfide	X	1 (0.454)
Barium cyanide	A	10 (4.54)
Benzene	A	10 (4.54)
Benzoic acid	D	5,000 (2,270)
Benzonitrile	D	5,000 (2,270)
Benzoyl chloride	C	1,000 (454)
Benzyl chloride	B	100 (45.4)
Beryllium chloride	X	1 (0.454)
Beryllium fluoride	X	1 (0.454)
Beryllium nitrate	X	1 (0.454)
Butyl acetate	D	5,000 (2,270)
Butylamine	C	1,000 (454)
n-Butyl phthalate	A	10 (4.54)
Butyric acid	D	5,000 (2,270)
Cadmium acetate	A	10 (4.54)
Cadmium bromide	A	10 (4.54)
Cadmium chloride	A	10 (4.54)
Calcium arsenate	X	1 (0.454)
Calcium arsenite	X	1 (0.454)
Calcium carbide	A	10 (4.54)
Calcium chromate	A	10 (4.54)
Calcium cyanide	A	10 (4.54)
Calcium dodecylbenzenesulfonate	C	1,000 (454)
Calcium hypochlorite	A	10 (4.54)
Captan	A	10 (4.54)
Carbaryl	B	100 (45.4)
Carbofuran	A	10 (4.54)
Carbon disulfide	B	100 (45.4)
Carbon tetrachloride	A	10 (4.54)
Chlordane	X	1 (0.454)
Chlorine	A	10 (4.54)
Chlorobenzene	B	100 (45.4)
Chloroform	A	10 (4.54)
Chlorosulfonic acid	C	1,000 (454)
Chlorpyrifos	X	1 (0.454)
Chromic acetate	C	1,000 (454)
Chromic acid	A	10 (4.54)
Chromic sulfate	C	1,000 (454)
Chromous chloride	C	1,000 (454)
Cobaltous bromide	C	1,000 (454)
Cobaltous formate	C	1,000 (454)
Cobaltous sulfamate	C	1,000 (454)
Coumaphos	A	10 (4.54)
Cresol	B	100 (45.4)
Crotonaldehyde	B	100 (45.4)

Cupric acetate	B	100 (45.4)
Cupric acetoarsenite	X	1 (0.454)
Cupric chloride	A	10 (4.54)
Cupric nitrate	B	100 (45.4)
Cupric oxalate	B	100 (45.4)
Cupric sulfate	A	10 (4.54)
Cupric sulfate, ammoniated	B	100 (45.4)
Cupric tartrate	B	100 (45.4)
Cyanogen chloride	A	10 (4.54)
Cyclohexane	C	1,000 (454)
2,4-D Acid	B	100 (45.4)
2,4-D Esters	B	100 (45.4)
DDT	X	1 (0.454)
Diazinon	X	1 (0.454)
Dicamba	C	1,000 (454)
Dichlobenil	B	100 (45.4)
Dichlone	X	1 (0.454)
Dichlorobenzene	B	100 (45.4)
Dichloropropane	C	1,000 (454)
Dichloropropene	B	100 (45.4)
Dichloropropene-Dichloropropane (mixture).	B	100 (45.4)
2,2-Dichloropropionic acid	D	5,000 (2,270)
Dichlorvos	A	10 (4.54)
Dicofol	A	10 (4.54)
Dieldrin	X	1 (0.454)
Diethylamine	B	100 (45.4)
Dimethylamine	C	1,000 (454)
Dinitrobenzene (mixed)	B	100 (45.4)
Dinitrophenol	A	10 (45.4)
Dinitrotoluene	A	10 (4.54)
Diquat	C	1,000 (454)
Disulfoton	X	1 (0.454)
Diuron	B	100 (45.4)
Dodecylbenzenesulfonic acid	C	1,000 (454)
Endosulfan	X	1 (0.454)
Endrin	X	1 (0.454)
Epichlorohydrin	B	100 (45.4)
Ethion	A	10 (4.54)
Ethylbenzene	C	1,000 (454)
Ethylenediamine	D	5,000 (2,270)
Ethylenediamine-tetraacetic acid (EDTA).	D	5,000 (2,270)
Ethylene dibromide	X	1 (0.454)
Ethylene dichloride	B	100 (45.4)
Ferric ammonium citrate	C	1,000 (454)
Ferric ammonium oxalate	C	1,000 (454)
Ferric chloride	C	1,000 (454)
Ferric fluoride	B	100 (45.4)
Ferric nitrate	C	1,000 (454)
Ferric sulfate	C	1,000 (454)
Ferrous ammonium sulfate	C	1,000 (454)
Ferrous chloride	B	100 (45.4)
Ferrous sulfate	C	1,000 (454)
Formaldehyde	B	100 (45.4)
Formic acid	D	5,000 (2,270)

Fumaric acid	D	5,000 (2,270)
Furfural	D	5,000 (2,270)
Guthion	X	1 (0.454)
Heptachlor	X	1 (0.454)
Hexachlorocyclopentadiene	A	10 (4.54)
Hydrochloric acid	D	5,000 (2,270)
Hydrofluoric acid	B	100 (45.4)
Hydrogen cyanide	A	10 (4.54)
Hydrogen sulfide	B	100 (45.4)
Isoprene	B	100 (45.4)
Isopropanolamine dodecylbenzenesulfonate.	C	1,000 (454)
Kepone	X	1 (0.454)
Lead acetate	A	10 (4.54)
Lead arsenate	X	1 (0.454)
Lead chloride	A	10 (4.54)
Lead fluoborate	A	10 (4.54)
Lead fluoride	A	10 (4.54)
Lead iodide	A	10 (4.54)
Lead nitrate	A	10 (4.54)
Lead stearate	A	10 (4.54)
Lead sulfate	A	10 (4.54)
Lead sulfide	A	10 (4.54)
Lead thiocyanate	A	10 (4.54)
Lindane	X	1 (0.454)
Lithium chromate	A	10 (4.54)
Malathion	B	100 (45.4)
Maleic acid	D	5,000 (2,270)
Maleic anhydride	D	5,000 (2,270)
Mercaptodimethur	A	10 (4.54)
Mercuric cyanide	X	1 (0.454)
Mercuric nitrate	A	10 (4.54)
Mercuric sulfate	A	10 (4.54)
Mercuric thiocyanate	A	10 (4.54)
Mercurous nitrate	A	10 (4.54)
Methoxychlor	X	1 (0.454)
Methyl mercaptan	B	100 (45.4)
Methyl methacrylate	C	1,000 (454)
Methyl parathion	B	100 (45.4)
Mevinphos	A	10 (4.54)
Mexacarbate	C	1,000 (454)
Monoethylamine	B	100 (45.4)
Monomethylamine	B	100 (45.4)
Naled	A	10 (4.54)
Naphthalene	B	100 (45.4)
Naphthenic acid	B	100 (45.4)
Nickel ammonium sulfate	B	100 (45.4)
Nickel chloride	B	100 (45.4)
Nickel hydroxide	A	10 (4.54)
Nickel nitrate	B	100 (45.4)
Nickel sulfate	B	100 (45.4)
Nitric acid	C	1,000 (454)
Nitrobenzene	C	1,000 (454)
Nitrogen dioxide	A	10 (4.54)
Nitrophenol (mixed)	B	100 (45.4)

Nitrotoluene	C	1,000 (454)
Paraformaldehyde	C	1,000 (454)
Parathion	A	10 (4.54)
Pentachlorophenol	A	10 (4.54)
Phenol	C	1,000 (454)
Phosgene	A	10 (4.54)
Phosphoric acid	D	5,000 (2,270)
Phosphorus	X	1 (0.454)
Phosphorus oxychloride	C	1,000 (454)
Phosphorus pentasulfide	B	100 (45.4)
Phosphorus trichloride	C	1,000 (454)
Polychlorinated biphenyls	X	1 (0.454)
Potassium arsenate	X	1 (0.454)
Potassium arsenite	X	1 (0.454)
Potassium bichromate	A	10 (4.54)
Potassium chromate	A	10 (4.54)
Potassium cyanide	A	10 (4.54)
Potassium hydroxide	C	1,000 (454)
Potassium permanganate	B	100 (45.4)
Propargite	A	10 (4.54)
Propionic acid	D	5,000 (2,270)
Propionic anhydride	D	5,000 (2,270)
Propylene oxide	B	100 (45.4)
Pyrethrins	X	1 (0.454)
Quinoline	D	5,000 (2,270)
Resorcinol	D	5,000 (2,270)
Selenium oxide	A	10 (4.54)
Silver nitrate	X	1 (0.454)
Sodium	A	10 (4.54)
Sodium arsenate	X	1 (0.454)
Sodium arsenite	X	1 (0.454)
Sodium bichromate	A	10 (4.54)
Sodium bifluoride	B	100 (45.4)
Sodium bisulfite	D	5,000 (2,270)
Sodium chromate	A	10 (4.54)
Sodium cyanide	A	10 (4.54)
Sodium dodecylbenzenesulfonate	C	1,000 (454)
Sodium fluoride	C	1,000 (454)
Sodium hydrosulfide	D	5,000 (2,270)
Sodium hydroxide	C	1,000 (454)
Sodium hypochlorite	B	100 (45.4)
Sodium methylate	C	1,000 (454)
Sodium nitrite	B	100 (45.4)
Sodium phosphate, dibasic	D	5,000 (2,270)
Sodium phosphate, tribasic	D	5,000 (2,270)
Sodium selenite	B	100 (45.4)
Strontium chromate	A	10 (4.54)
Strychnine	A	10 (4.54)
Styrene	C	1,000 (454)
Sulfuric acid	C	1,000 (454)
Sulfur monochloride	C	1,000 (454)
2,4,5-T acid	C	1,000 (454)
2,4,5-T amines	D	5,000 (2,270)
2,4,5-T esters	C	1,000 (454)
2,4,5-T salts	C	1,000 (454)
TDE	X	1 (0.454)

2,4,5-TP acid	B	100 (45.4)
2,4,5-TP acid esters	B	100 (45.4)
Tetraethyl lead	A	10 (4.54)
Tetraethyl pyrophosphate	A	10 (4.54)
Thallium sulfate	B	100 (45.4)
Toluene	C	1,000 (454)
Toxaphene	X	1 (0.454)
Trichlorfon	B	100 (45.4)
Trichloroethylene	B	100 (45.4)
Trichlorophenol	A	10 (4.54)
Triethanolamine dodecylbenzenesulfonate.	C	1,000 (454)
Triethylamine	D	5,000 (2,270)
Trimethylamine	B	100 (45.4)
Uranyl acetate	B	100 (45.4)
Uranyl nitrate	B	100 (45.4)
Vanadium pentoxide	C	1,000 (454)
Vanadyl sulfate	C	1,000 (454)
Vinyl acetate	D	5,000 (2,270)
Vinylidene chloride	B	100 (45.4)
Xylene (mixed)	B	100 (45.4)
Xylenol	C	1,000 (454)
Zinc acetate	C	1,000 (454)
Zinc ammonium chloride	C	1,000 (454)
Zinc borate	C	1,000 (454)
Zinc bromide	C	1,000 (454)
Zinc carbonate	C	1,000 (454)
Zinc chloride	C	1,000 (454)
Zinc cyanide	A	10 (4.54)
Zinc fluoride	C	1,000 (454)
Zinc formate	C	1,000 (454)
Zinc hydrosulfite	C	1,000 (454)
Zinc nitrate	C	1,000 (454)
Zinc phenolsulfonate	D	5,000 (2,270)
Zinc phosphide	B	100 (45.4)
Zinc silicofluoride	D	5,000 (2,270)
Zinc sulfate	C	1,000 (454)
Zirconium nitrate	D	5,000 (2,270)
Zirconium potassium fluoride	C	1,000 (454)
Zirconium sulfate	D	5,000 (2,270)
Zirconium tetrachloride	D	5,000 (2,270)

– [50 FR 13513, Apr. 4, 1985, as amended at 51 FR 34547, Sept. 29, 1986; 54 FR 33482, Aug. 14, 1989; 58 FR 35327, June 30, 1993; 60 FR 30937, June 12, 1995]

APPENDIX N

SEDIMENTATION BASIN INFORMATION AND CALCULATIONS

Sites With Drainage Areas of Ten or More Acres

A sedimentation basin is required, where feasible, for a common drainage location that serves an area with ten (10) or more acres disturbed at one time.

A sedimentation basin may be temporary or permanent, and must provide sufficient storage to contain a calculated volume of runoff from a 2-year, 24-hour storm from each disturbed acre drained. When calculating the volume of runoff from a 2-year, 24-hour storm event, it is not required to include the flows from offsite areas and flow from onsite areas that are either undisturbed or have already undergone permanent stabilization, if these flows are diverted around both the disturbed areas of the site and the sediment basin. Capacity calculations shall be included in Appendix N of this SWP3.

Where rainfall data is not available or a calculation cannot be performed, the sedimentation basin must provide at least 3,600 cubic feet of storage per acre drained until final stabilization of the site.

If a sedimentation basin is not feasible, then the permittee shall provide equivalent control measures until final stabilization of the site. In determining whether installing a sediment basin is feasible, the permittee may consider factors such as site soils, slope, available area, public safety, precipitation patterns, site geometry, site vegetation, infiltration capacity, geotechnical factors, depth to groundwater, and other similar considerations. The permittee shall document the reason that the sediment basins are not feasible, and shall utilize equivalent control measures, which may include a series of smaller sediment basins.

Sites With Drainage Areas Less than Ten Acres

Sediment traps and sediment basins may be used to control solids in storm water runoff for drainage locations serving less than ten (10) acres.

Alternatively, a sediment basin that provides storage for a calculated volume of runoff from a 2-year, 24-hour storm from each disturbed acre drained may be utilized. Where rainfall data is not available or a calculation cannot be performed, a temporary or permanent sediment basin providing 3,600 cubic feet of storage per acre drained may be provided. If a calculation is performed, then the calculation shall be included in Appendix N of this SWP3.

APPENDIX O

LOCAL REQUIREMENTS

SECTION 11.04. - STORMWATER MANAGEMENT SYSTEM REQUIREMENTS

No Site Plan, plat, subdivision, or Stormwater Permit may be approved unless the project meets the minimum requirements of this Code in making adequate provision for control of the quantity of stormwater runoff to the benefit of both future owners of property within the subdivision and other lands within the watershed.

Sec. 11.04.010. - General Requirements.

It shall be the responsibility of the subdivider to design and construct a system for the collection and conveyance of all stormwater run-off flowing onto and generated within the subdivision in accordance with:

A. Any specific or general requirements of these regulations;

B. The City of Georgetown Drainage Criteria Manual;

C. Chapter 15.44, Flood damage prevention, of the Georgetown Municipal Code;

D. Good engineering practices;

E. City-approved plans, including any regional stormwater plans; and

F. The principles of stormwater law established by the Texas Water Code.

G. The preservation of existing trees.

Sec. 11.04.020. - Basic Design Objectives.

In general, the stormwater management system shall be designed and constructed in a manner which promotes the development of a network of both natural and built drainage ways throughout the community and so as to:

A. Retain natural flood plains in a condition that minimizes interference with flood water conveyance, floodwater storage, aquatic and terrestrial ecosystems, and ground and surface water.

B. Reduce exposure of people and property to the flood hazard and nuisance associated with inadequate control of run-off.

C. Systematically reduces the existing level of flood damages.

D. Ensure that corrective works are consistent with the overall goals of the City.

E. Minimize erosion and sedimentation problems and enhance water quality.

F. Protect environmental quality, social well being, and economic stability.

G. Plan for both the large flooding events and the smaller, more frequent flooding by providing both major and minor drainage systems.

H. Minimize future operational and maintenance expenses.

I. Reduce exposure of public investment in utilities, streets, and other public facilities (infrastructure).

J. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the public.

K. Acquire and maintain a combination of recreational and open space systems utilizing flood plain lands.

L. Preserve natural drainage patterns and limit the amount of impervious cover so as to prevent erosion, maintain infiltration and recharge of local seeps and springs, and attenuate the harm of

contaminants collected and transported by stormwater. Overland sheet flow shall be maintained whenever possible and the dispersion of run-off back to sheet flow shall be a primary objective of drainage design for the subdivision as opposed to concentration of flows in storm sewers and drainage ditches.

Sec. 11.04.030. - General Design Requirements.

A. The storm drainage system shall be separate and independent of any sanitary sewer system and its use shall not interfere with the operation and maintenance of road networks or utility systems.

B. Each lot, site, and block within the subdivision shall be adequately drained as prescribed in the City's Drainage Criteria Manual and the City's Construction Standards and Specifications for Roads, Streets, Structures, and Utilities. Any use of retaining walls or similar construction shall be indicated on the Preliminary Plat and the Utilities Director may require Construction Plans, for such structure.

C. No approval shall be issued which would permit building within a regulatory floodway of any stream or watercourse. The City may, when it deems necessary for the protection of the health, safety, or welfare of the present and future population, prohibit the subdivision and/or development of any property, which lies within a designated regulatory floodway of any stream or watercourse.

D. No lot or building site shall derive sole access to a public street across a waterway unless such access shall be constructed to remain open under design storm conditions as prescribed in the City's Drainage Criteria Manual.

E. Areas subject to inundation under design storm conditions shall be indicated with the minimum floor elevation of each lot so affected on a certified copy of the Preliminary Plat submitted for filing. The appropriate final action authority for plat approval may, when it deems necessary for the protection of the health, safety, or welfare of the present and future populations, place restrictions on the subdivision, regarding the design and use of areas within a drainageway. The final action authority shall not approve any subdivision of land within any stream or watercourse unless the applicant demonstrates that the subdivision and all development anticipated therein will comply with the requirements of this Code.

F. Design of all drainage facilities, including streets, inlets, storm sewers, outfall, culverts, and ditches, shall conform to the City's Drainage Criteria Manual, the City's Construction Specifications and Standards Manual, and the following general design standards.

    1. Drainage facilities are not allowed within the front setback except those that are necessary to convey drainage in the shortest possible route to or from the street right-of-way, as determined by the Development Engineer. Drainage facilities include all detention ponds, water quality ponds, outlet structures, drainage berms, improved channels, or other improvements associated with the drainage improvements.

    2. All detention ponds and water quality ponds within the front setback shall be designed to the greatest extent possible to conform to the natural terrain of the land and if possible as curvilinear, non-rectangular shapes. Detention ponds and water quality ponds within the front street setback shall not contain concrete walls (or similar material). Outlet structures may be concrete. For detention and water quality ponds located behind the gateway landscape buffer, native stone - if mortared in place or dry stacked, or sloped grass walls are required if visible from the right-of-way.

    3. Fencing is allowed around detention ponds only if the fencing is constructed of wrought iron or tubular steel or other similar product. Chain link fencing is not allowed. The fence shall be buffered from the street view by planting five-gallon evergreen shrubs and vines that shall, at maturity, screen at least 40 percent (40%) of the view of the detention pond and fence.

    4. Separate ponds for each lot may be utilized if they are designed with a curvilinear contoured shape, do not require fencing, utilize vegetative slope stabilization with a slope not exceeding 3:1, and do not use structural retaining walls.

G. Projected runoff rates for the design of drainage facilities shall be based on the expected ultimate developed state of the upstream contributing area. Said ultimate developed state shall be based on the maximum intensity allowable under the UDC, the Comprehensive Plan, and approved plans within the contributing area.

H. Design of major drainage ways through a subdivision and major structures such as box culverts or bridges across a major drainage channel shall be coordinated with the requirements of the Williamson County Health District when any portion of the subdivision lies outside the City limits, and when applicable, a letter requesting a local floodplain map amendment from the Federal Emergency Management Agency (FEMA) shall be provided prior to final Construction Plan approval.

Sec. 11.04.040. - Building Permits and Utility Connections.

A. Plans submitted for building permits and/or utility connections shall include the necessary drainage related facilities designed and provided for in compliance with this Code and the City's Drainage Criteria Manual. The following types of construction are exempt from this requirement:

1. Single-family and two-family residential construction;
2. Permanent new buildings or additions less than 144 square feet;
3. Any other project that does not increase the total amount of impervious cover; and
4. Those projects already in compliance with this Code.

B. Plans and design calculations for all drainage facilities shall be submitted to the Drainage Engineer prior to issuance of any permit within the development or subdivision.

Sec. 11.04.050. - Drainage Easements.

The requirements set forth herein are not intended to be exhaustive and wherever it is necessary to make additional requirements in order to maximize the effectiveness of the drainage plan in question, such requirements shall be made by the Commission.

A. **General Requirements.**

Where a subdivision is traversed by a watercourse, drainage way, channel, or stream or where a detention/filtration facility is required, there shall be provided a stormwater easement or drainage right-of-way conforming substantially to the lines of such watercourse or facility, and of such width and construction to contain the design storm and required freeboard. When parking lots or other approved use areas serve a dual function, including detention, those areas shall be designated on the plat as detention areas. The drainage must, at a minimum, be maintained by an open channel with landscaped banks having adequate width to contain the volume of flow generated by the design storm under ultimate development conditions.

B. **Design Requirements.**

1. Where topography or other conditions are such as to make impractical the inclusion of drainage facilities within the road right-of-way, as determined by the Drainage Engineer, perpetual unobstructed easements at least 15 feet in width for such drainage facilities shall be provided across property outside the road lines and with satisfactory access to the road. Easements shall be recorded by separate instrument and indicated on the plat. Drainage easements shall be carried from the road to a natural watercourse or to other drainage facilities.
2. When a proposed drainage system will carry water across private land outside the subdivision, drainage easements shall be secured and recorded by separate instrument in the property records of Williamson County and drawn on the Construction Plans.
3. Low lying lands along watercourses subject to flooding or overflowing during storm periods shall be preserved and retained in their natural state as drainage ways except where

modification can be shown to benefit the community and as approved by the City Council. All development activity within the regulatory floodplain must comply with City and Federal Emergency Management Agency (FEMA) floodplain management regulations.

4. All sedimentation, filtration, detention, and/or retention basins and related appurtenances shall be situated within a drainage easement that is recorded by separate instrument in the property records of Williamson County. The owners of the tracts upon which are located such easements, appurtenances, and detention facilities shall maintain same and be responsible for their upkeep. Notice of such duty to maintain shall be shown on the plats.

APPENDIX P

CONCRETE BATCH PLANT RECORDS

APPENDIX Q

EDWARDS AQUIFER CHAPTER 213 SUBCHAPTER C

Effective Date: March 31, 2011

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Permanent Rule Change

Rule Project Number 2010-055-311-OW
Discharge of Pesticides into, Over or Near the Highland Lakes and Areas Over the Edwards Aquifer

Chapter 213
Edwards Aquifer
Subchapter C

Chapter 311
Watershed Protection
Subchapter I

1. Purpose. This change transmittal provides the pages that reflect changes and additions to the Texas Commission on Environmental Quality (commission) Volume of Permanent Rules.

2. Explanation of Change. On March 9, 2011, the commission adopted new §213.31 *without changes* to the proposed text as published in the December 10, 2010, issue of the *Texas Register* (35 TexReg 10813) and was not republished**.** Also adopted was new §311.91 *without changes* to the proposed text as published in the December 10, 2010, issue of the *Texas Register* (35 TexReg 10899) and was not republished.

3. Effects of Change. The Office of Compliance and Enforcement and the Office of Water are adding Subchapter C to Chapter 213, and Subchapter I to Chapter 311, authorizing the application of pesticides within the Highland Lakes and Edwards Aquifer recharge, contributing, and transition zones. Both Chapters 213 and 311 currently contain discharge prohibitions or areas where increased pollutant load is prohibited. Pesticide usage is required for the continued protection of human health and the environment. This rulemaking is a follow-up to Project No. 2010-058-PET-NR, which is a Petition for Rulemaking that was filed with the commission on September 9, 2010, by the Texas Park and Wildlife Department.

HISTORY PAGE

CHAPTER 213
EDWARDS AQUIFER

Rule Project No. 2010-055-311-OW
Discharge of Pesticides into, Over or Near the Highland Lakes and Areas Over the Edwards Aquifer
New: §213.31
Date Adopted: March 9, 2011
Date Filed with the Secretary of State: March 11, 2011
Date Published in the *Texas Register*: March 25, 2011
Date Effective: March 31, 2011

Rule Project No. 2007-032-213-CE
HB 3098: Edwards Aquifer Fees
Amendments to: §§213.9, 213.13, 213.14, 213.26 - 213.28
Date Adopted: April 2, 2008
Date Filed with the Secretary of State: April 4, 2008
Date Published in the *Texas Register*: April 18, 2008
Date Effective: April 24, 2008

Rule Project No. 2003-029-213-PR
Remapping of Edwards Aquifer Recharge Zone
Amendments to: §§213.1, 213.3, 213.4, 213.12, 213.20 - 213.22, 213.24, 213.27
Date Adopted: August 10, 2005
Date Filed with the Secretary of State: August 12, 2005
Date Published in the *Texas Register*: August 26, 2005
Date Effective: September 1, 2005

Rule Log No. 2001-051A-213-WT
Senate Bill 405: Edwards Aquifer
Amendments to: §213.3, §213.5
Date Adopted: July 23, 2003
Date Filed with the Secretary of State: July 25, 2003
Date Published in the *Texas Register*: August 8, 2003
Date Effective: September 1, 2003

Rule Log No. 2001-093-331-WS
Senate Bill 2, §11.03 (Ban on Injection Wells in Edwards Aquifer)
Amendments to: §213.3, §213.8
Date Adopted: October 10, 2002
Date Filed with the Secretary of State: October 14, 2002
Date Published in the *Texas Register*: October 25, 2002

Date Effective: November 3, 2002

Rule Log No. 2001-086-213-WT
HB 2912 Art. 10: Edwards Aquifer Protection Plans Comment Period
Amendments to: §213.4 and §213.23
Date Adopted: June 26, 2002
Date Filed with the Secretary of State: June 28, 2002
Date Published in the *Texas Register*: July 12, 2002
Date Effective: July 19, 2002

Rule Log No. 2002-006-213-WT
Quadrennial Review of Chapter 213
Date Adopted: May 8, 2002
Date Filed with the Secretary of State: May 10, 2002
Date Published in the *Texas Register*: May 24, 2002
Date Effective: May 10, 2002

Rule Log No. 97105-213-WT
Edwards Aquifer Phase II
Amendments to: §§213.3 - 213.10
New: §§213.20 - 213.28
Date Adopted: September 23, 1998
Date Filed with the Secretary of State: September 25, 1998
Date Published in the *Texas Register*: October 9, 1998
Date Effective: June 1, 1999

Rule Log No. 97134-213-WT
Edwards Aquifer Program Fee/House Bill 1016
Amendments to: §213.14
Date Adopted: October 15, 1997
Date Filed with the Secretary of State: October 20, 1997
Date Published in the *Texas Register*: October 31, 1997
Date Effective: November 14, 1997

New: §§213.1 - 213.14
Date Adopted: December 4, 1996
Date Filed with the Secretary of State: December 6, 1996
Date Effective: December 27, 1996

INDEX

CHAPTER 213
EDWARDS AQUIFER

SUBCHAPTER A: EDWARDS AQUIFER IN MEDINA, BEXAR, COMAL, KINNEY, UVALDE HAYS, TRAVIS, AND WILLIAMSON COUNTIES

SUBCHAPTER B: CONTRIBUTING ZONE TO THE EDWARDS AQUIFER IN MEDINA, BEXAR, COMAL, KINNEY, UVALDE, HAYS, TRAVIS, AND WILLIAMSON COUNTIES

SUBCHAPTER C: DISCHARGE OF PESTICIDES

SUBCHAPTER A: EDWARDS AQUIFER IN MEDINA, BEXAR, COMAL, KINNEY, UVALDE, HAYS, TRAVIS, AND WILLIAMSON COUNTIES
§§213.1 - 213.14
Effective April 24, 2008

§213.1. Purpose.

The purpose of this chapter is to regulate activities having the potential for polluting the Edwards Aquifer and hydrologically connected surface streams in order to protect existing and potential uses of groundwater and maintain Texas Surface Water Quality Standards. The activities addressed are those that pose a threat to water quality.

(1) Consistent with Texas Water Code, §26.401, the goal of this chapter is that the existing quality of groundwater not be degraded, consistent with the protection of public health and welfare, the propagation and protection of terrestrial and aquatic life, the protection of the environment, the operation of existing industries, and the maintenance and enhancement of the long-term economic health of the state.

(2) Nothing in this chapter is intended to restrict the powers of the commission or any other governmental entity to prevent, correct, or curtail activities that result or may result in pollution of the Edwards Aquifer or hydrologically connected surface waters. In addition to the rules of the commission, an applicant may also be required to comply with local ordinances and regulations providing for the protection of water quality.

(3) The executive director shall review and act on an application subject to this chapter. The applicant or a person affected may file with the chief clerk a motion to overturn, under §50.139(a), (b), and (d) - (g) of this title (relating to Motion to Overturn Executive Director's Decision), of the executive director's final action on an Edwards Aquifer protection plan, modification to a plan, or exception.

Adopted August 10, 2005 Effective September 1, 2005

§213.2. Applicability and Person or Entity Required to Apply.

These rules specifically apply to the Edwards Aquifer and are not intended to be applied to any other aquifers in the state of Texas. Unless otherwise provided under this chapter, the owner of an existing or proposed site, such as a residential or commercial development, sewage collection system, or aboveground or underground storage tank facility for static hydrocarbons or hazardous substances, who proposes new or additional regulated activities under this chapter, must file and receive executive director approval of all appropriate applications prior to commencement of construction of new or additional regulated activities.

Adopted December 4, 1996 Effective December 27, 1996

§213.3. Definitions.

The following words and terms, when used in this chapter, have the following meanings.

(1) **Abandoned well** - A well that has not been used for six consecutive months. A well is considered to be in use in the following cases:

(A) a non-deteriorated well that contains the casing, pump, and pump column in good condition; or

(B) a non-deteriorated well that has been properly capped.

(2) **Aboveground storage tank facility** - The site, tract, or other area where one or more aboveground storage tank systems are located, including all adjoining contiguous land and associated improvements.

(3) **Aboveground storage tank system** - A non-vehicular device (including any associated piping) that is made of nonearthen materials; located on or above the ground surface, or on or above the surface of the floor of a structure below ground, such as a mineworking, basement, or vault; and designed to contain an accumulation of static hydrocarbons or hazardous substances.

(4) **Appropriate regional office** - For regulated activities covered by this chapter and located in Hays, Travis, and Williamson Counties, the appropriate regional office is Region 11, located in Austin, Texas. For regulated activities covered by this chapter and located in Kinney, Uvalde, Medina, Bexar, and Comal Counties, the appropriate regional office is Region 13, located in San Antonio, Texas.

(5) **Best management practices (BMPs)** - A schedule of activities, prohibitions, practices, maintenance procedures, and other management practices to prevent or reduce the pollution of water in the state. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs are those measures that are reasonable and necessary to protect groundwater and surface water quality, as provided in technical guidance prepared by the executive director or other BMPs that are technically justified based upon studies and other information that are generally relied upon by professionals in the environmental protection field and are supported by existing or proposed performance monitoring studies, including, but not limited to, the United States Environmental Protection Agency, American Society of Civil Engineers, and Water Environment Research Foundation guidance.

(6) **Capped well** - A well that is closed or capped with a covering capable of preventing surface pollutants from entering the well. The cap must be able to sustain a weight of at least 400 pounds. The cap must not be easily removed by hand.

(7) **Commencement of construction** - The initial disturbance of soils associated with clearing, grading, or excavating activities or other construction or regulated activities.

(8) **Edwards Aquifer** - That portion of an arcuate belt of porous, waterbearing, predominantly carbonate rocks known as the Edwards (Balcones Fault Zone) Aquifer trending from west to east to northeast in Kinney, Uvalde, Medina, Bexar, Comal, Hays, Travis, and Williamson Counties; and composed of the Salmon Peak Limestone, McKnight Formation, West Nueces Formation, Devil's

River Limestone, Person Formation, Kainer Formation, Edwards Group, and Georgetown Formation. The permeable aquifer units generally overlie the less-permeable Glen Rose Formation to the south, overlie the less-permeable Comanche Peak and Walnut formations north of the Colorado River, and underlie the less-permeable Del Rio Clay regionally.

(9) **Edwards Aquifer protection plan** - A general term that includes a water pollution abatement plan, organized sewage collection system plan, underground storage tank facility plan, aboveground storage tank facility plan, or a modification or exception granted by the executive director.

(10) **Edwards Aquifer protection plan holder** - The person who is responsible for compliance with an approved water pollution abatement plan, organized sewage collection system plan, underground storage tank facility plan, aboveground storage tank facility plan, or a modification or exception granted by the executive director.

(11) **Concentrated animal feeding operation** - As defined in §321.32 of this title (relating to Definitions).

(12) **Geologic or manmade features** - Features including, but not limited to, closed depressions, sinkholes, caves, faults, fractures, bedding plane surfaces, interconnected vugs, reef deposits, wells, borings, and excavations.

(13) **Geologic assessment** - A report that is prepared by a geologist describing site-specific geology.

(14) **Geologist** - A Texas licensed professional geoscientist who has training and experience in groundwater hydrology and related fields that enable that individual to make sound professional judgments regarding the identification of sensitive features located in the recharge zone or transition zone.

(15) **Groundwater conservation district** - Any groundwater district created by the legislature or the commission subject to Texas Water Code, Chapter 36, to conserve, preserve, and protect the waters of a groundwater water reservoir.

(16) **Hazardous substance** - Any substance designated as such by the administrator of the United States Environmental Protection Agency under the Comprehensive Environmental Response, Compensation, and Liability Act; regulated in accordance with Federal Water Pollution Control Act, Chapter 311; or any solid waste, or other substance that is designated to be hazardous by the commission, in accordance with Texas Water Code, §26.263 or Texas Health and Safety Code, §361.003.

(17) **Impervious cover** - Impermeable surfaces, such as pavement or rooftops, that prevent the infiltration of water into the soil. Rainwater collection systems for domestic water supplies are not considered impervious cover.

(18) **Industrial wastewater discharge** - Any category of wastewater except:

(A) those that are primarily domestic in composition; or

(B) those emanating from feedlot/concentrated animal feeding operations.

(19) **Injection well** - An injection well as defined under Chapter 331 of this title (relating to Underground Injection Control).

(20) **Land application system** - A wastewater disposal system designed not to discharge wastewater into a surface drainage way.

(21) **Licensed professional geoscientist** - A geoscientist who maintains a current license through the Texas Board of Professional Geoscientists in accordance with its requirements for professional practice.

(22) **Organized sewage collection system** - Any public or private sewage system for the collection and conveyance of sewage to a treatment and disposal system that is regulated in accordance with rules of the commission and provisions of Texas Water Code, Chapter 26. A system may include lift stations, force mains, gravity lines, and any other appurtenance necessary for conveying wastewater from a generating facility to a treatment plant.

(23) **Permanent best management practices** - Best management practices used to prevent and control pollution from regulated activities after construction is complete.

(24) **Pollution** - The alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any water in the state that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property, or to public health, safety, or welfare, or impairs the usefulness of the public enjoyment of the waters for any lawful or reasonable purpose.

(25) **Private sewage facilities** - On-site sewage facilities as defined under Chapter 285 of this title (relating to On-Site Sewage Facilities).

(26) **Private service lateral** - A wastewater line extending from the building drain to an existing private or public sewage collection system or other place of disposal that provides service to one single-family residence or building, with the operation and maintenance as the sole responsibility of the tenant or owner of the building. A wastewater line extending from the convergence of private service laterals from more than one single-family residence or building is considered a sewage collection system.

(27) **Recharge zone** - Generally, that area where the stratigraphic units constituting the Edwards Aquifer crop out, including the outcrops of other geologic formations in proximity to the Edwards Aquifer, where caves, sinkholes, faults, fractures, or other permeable features would create a potential for recharge of surface waters into the Edwards Aquifer. The recharge zone is identified as that area designated as such on official maps located in the agency's central office and in the appropriate regional office.

(28) **Regulated activity** -

(A) Any construction-related or post-construction activity on the recharge zone of the Edwards Aquifer having the potential for polluting the Edwards Aquifer and hydrologically connected surface streams. These activities include, but are not limited to:

(i) construction of buildings, utility stations, utility lines, roads, highways, or railroads;

(ii) clearing, excavation, or any other activities that alter or disturb the topographic, geologic, or existing recharge characteristics of a site;

(iii) any installation of aboveground or underground storage tank facilities on the recharge or transition zone of the Edwards Aquifer; or

(iv) any other activities that may pose a potential for contaminating the Edwards Aquifer and hydrologically connected surface streams.

(B) Regulated activity does not include:

(i) clearing of vegetation without soil disturbance;

(ii) agricultural activities, except feedlots/concentrated animal feeding operations that are regulated under Chapter 321 of this title (relating to Control of Certain Activities by Rule);

(iii) activities associated with the exploration, development, and production of oil, gas, or geothermal resources under the jurisdiction of the Railroad Commission of Texas;

(iv) routine maintenance of existing structures that does not involve additional site disturbance, such as, but not limited to:

(I) the resurfacing of existing paved roads, parking lots, sidewalks, or other development-related impervious surfaces; and

(II) the building of fences, or other similar activities in which:

(-a-) there is little or no potential for contaminating groundwater; or

(-b-) there is little or no change to the topographic, geologic, or existing sensitive features; or

(v) construction of single-family residences on lots that are larger than five acres, where no more than one single-family residence is located on each lot.

(29) **Sensitive feature** - A permeable geologic or manmade feature located on the recharge zone or transition zone where:

(A) a potential for hydraulic interconnectedness between the surface and the Edwards Aquifer exists; and

(B) rapid infiltration to the subsurface may occur.

(30) **Sewage holding tank** - A tank or other containment structure used to receive and store sewage until its ultimate disposal in an approved treatment facility.

(31) **Site** - The entire area included within the legal boundaries of the property described in the application. Regulated activities on a site that is located partially on the recharge zone and transition zone, where the natural drainage in the transition zone flows back to the recharge zone, will be treated as if the entire site is located on the recharge zone.

(32) **Static hydrocarbon** - A hydrocarbon that is liquid at atmospheric pressure and 20 degrees centigrade.

(33) **Stub out** - A wye, tee, or other manufactured appurtenance placed in a sewage collection system providing a location for a future extension of the collection system.

(34) **Temporary best management practices** - Best management practices used to prevent and control pollution from regulated activities during construction.

(35) **Tertiary containment** - A containment method by which an additional wall or barrier is installed outside of the secondary storage vessel (e.g., tank or piping) or other secondary barrier in a manner designed to prevent a release from migrating beyond the tertiary wall or barrier before the release can be detected. Tertiary containment systems include, but are not limited to, impervious liners and vaults surrounding a secondary tank and/or piping system, or equivalent triple wall tank or piping system as approved by the executive director.

(36) **Transition zone** - That area where geologic formations crop out in proximity to and south and southeast of the recharge zone and where faults, fractures, and other geologic features present a possible avenue for recharge of surface water to the Edwards Aquifer, including portions of the Del Rio Clay, Buda Limestone, Eagle Ford Group, Austin Chalk, Pecan Gap Chalk, and Anacacho Limestone. The transition zone is identified as that area designated as such on official maps located in the agency's central office and in the appropriate regional office.

(37) **Underground storage tank facility** - The site, tract, or other defined area where one or more underground storage tank systems are located, including all contiguous land and associated improvements.

(38) **Underground storage tank system** - Any one or combination of underground tanks and any connecting underground pipes used to contain an accumulation of regulated substances, the

volume of which, including the volume of the connecting underground pipes, is 10% or more beneath the surface of the ground.

(39) **Well** - A bored, drilled, or driven shaft, or an artificial opening in the ground made by digging, jetting, or some other method, where the depth of the well is greater than its largest surface dimension. A well is not a surface pit, surface excavation, or natural depression.

Adopted August 10, 2005 Effective September 1, 2005

§213.4. Application Processing and Approval.

(a) Approval by the executive director.

(1) No person may commence the construction of any regulated activity until an Edwards Aquifer protection plan or modifications to the plan as required by §213.5 of this title (relating to Required Edwards Aquifer Protection Plans, Notification, and Exemptions) or exception under §213.9 of this title (relating to Exceptions) has been filed with the appropriate regional office, and the application has been reviewed and approved by the executive director.

(2) The appropriate regional office shall provide copies of applications to affected incorporated cities, groundwater conservation districts, and counties in which the proposed regulated activity will be located. These copies will be distributed within five days of the application being determined to be administratively complete. Any person may file comments within 30 days of the date the application is mailed to local governmental entities. The executive director shall review all comments that are timely filed.

(3) A complete application for approval, as described in this section, must be submitted with the appropriate fee as specified in §213.12 of this title (relating to Application Fees).

(4) Projects in progress when recharge and transition zone maps are revised.

(A) For areas designated as recharge zone or transition zone on official maps prior to the effective date of this paragraph, and for which this designation did not change, all Edwards Aquifer protection plans submitted to the executive director, on or after the effective date of this paragraph, will be reviewed under all the provisions of the subchapter in effect on the date the plan is submitted.

(B) For areas that were newly designated as recharge zone or transition zone on official maps on the effective date of this paragraph, regulated activities will be considered to have commenced construction and will be regulated under the provisions of this chapter that were in effect at the time the plan was approved by the executive director if, on the effective date, all federal, state, and local approvals or permits required to begin physical construction have been obtained, and if either on-site construction directly related to the development has begun or construction commences within six months of the effective date of this paragraph.

(C) Regulated activities in areas designated as transition zone on official maps prior to the effective date of this paragraph and designated as recharge zone on the effective date of this paragraph will be regulated as transition zone activities if, on the effective date, all federal, state, and local approvals or permits required to begin physical construction have been obtained, and if either on-site construction directly related to the development has begun or construction commences within six months of the effective date of this paragraph.

(D) The effective date of this paragraph is September 1, 2005.

(5) Assumption of program by local government.

(A) A local governmental entity may assume the rights, duties, and responsibilities to review and either approve or deny Edwards Aquifer protection plan applications within its boundaries and monitor and enforce compliance with plans if the local government obtains certification from the executive director.

(B) In order to obtain certification, the local government must demonstrate that:

(i) it has a water quality protection program equal to or more stringent than the rules contained in this chapter, including, but not limited to, a program that:

(I) regulates activities covered under this chapter; and

(II) has performance standards equal to or more protective of water quality;

(ii) it has adopted ordinances or has other enforceable means sufficient to enforce the program throughout the local governmental entity's jurisdiction; and

(iii) it has adequate resources to implement and enforce the program.

(C) Upon approval of a request for certification under this section, the executive director shall enter into an agreement with the local governmental entity to provide for the terms and conditions of program assumption, including executive director oversight. Nothing in a certification or agreement shall affect the commission's ability to enforce its water quality protection rules or applicable state law.

(D) An agreement under subparagraph (C) of this paragraph shall not provide for the payment of fees required by this chapter to the local entity, and shall not provide for partial assumption of the program unless expressly authorized by the commission. Fees shall be paid to the commission for continued proper oversight and enforcement.

(E) Certification shall be for a term not to exceed five years, subject to renewal.

(F) Upon written notice, certification may be revoked or suspended by the executive director if the local entity does not meet the terms and conditions of the agreement provided

under subparagraph (D) of this paragraph, or fails to meet the criteria for certification provided under subparagraph (B) of this paragraph.

(G) A decision by the executive director under this section is not subject to appeal to the commission.

(b) Contents of application.

(1) Forms provided by the executive director. Applications for approval filed under this chapter must be made on forms provided by or approved by the executive director. Each application for approval must, at a minimum, include the following:

(A) the name of the development, subdivision, or facility for which the application is submitted;

(B) a narrative description of the location of the project or facility for which the application is submitted, presenting sufficient detail and clarity so that the project site and its boundaries can be located during a field inspection;

(C) the name, address, and telephone number of the owner or any other person signing the application; and

(D) the information needed to determine the appropriate fee under §213.14 of this title (relating to Fee Schedule) for the following plan types:

(i) for water pollution abatement plans and modifications to plans, the total acreage of the site where regulated activities will occur;

(ii) for organized sewage collection system plans and modifications to plans, the total linear footage of all collection system lines; or

(iii) for static hydrocarbon and hazardous substance storage in underground or permanent aboveground storage tank facility plans, the total number of tanks or piping systems.

(2) Additional information. Each application must also include the following information, as applicable:

(A) for water pollution abatement plans, the information required under §213.5(b) of this title;

(B) for organized sewage collection system plans, the information required under §213.5(c) of this title;

(C) for static hydrocarbon and hazardous substance storage in underground storage tank systems, the information required under §213.5(d) of this title;

(D) for static hydrocarbon and hazardous substance storage in aboveground storage tank systems, the information required under §213.5(e) of this title; and

(E) any other pertinent information related to the application that the executive director may require.

(c) Application submittal.

(1) One original and one copy of the application must be submitted for the executive director's review and additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the proposed regulated activities will be located. The copies must be submitted to the appropriate regional office.

(2) Only owners, their authorized agent(s), or those persons having the right to possess and control the property that is the subject of the Edwards Aquifer protection plan may submit the plan for review and approval by the executive director.

(d) Signatories to applications.

(1) Required signature. All applications must be signed as follows.

(A) For a corporation, a principal executive officer (president, vice-president, or a duly authorized representative) must sign the application. A representative must submit written proof of the authorization.

(B) For a partnership, a general partner must sign the application.

(C) For a political entity such as a municipality, state, federal, or other public agency, either a principal executive officer or a duly authorized representative must sign the application. A representative must submit written proof of the authorization.

(D) For an individual or sole proprietorship, the individual or sole proprietor must sign the application.

(2) Proof of authorization to sign. The executive director requires written proof of authorization for any person signing an application.

(e) Executive director review. The executive director must complete the review of an application within 90 days after determining that it is administratively complete. The executive director must declare that the application is administratively complete or deficient within 30 days of receipt by the appropriate regional office. Grounds for a deficient application include, but are not limited to, failure to pay all applicable application fees.

(f) Additional provisions. As a condition of approval, the executive director may impose additional provisions deemed necessary to protect the Edwards Aquifer from pollution. The executive

director may conditionally approve an Edwards Aquifer protection plan or impose special conditions on the approval of a plan.

(g) Deed recordation.

(1) The applicant must record in the deed records of the county in which the property is located that the property is subject to an approved Edwards Aquifer protection plan within 30 days of receiving written approval of:

(A) a water pollution abatement plan;

(B) an aboveground storage tank plan;

(C) an underground storage tank plan;

(D) modifications to any of these plans for a proposed regulated activity; or

(E) an exception.

(2) A description of the property boundaries that is covered by the Edwards Aquifer protection plan shall be recorded in the county deed records.

(3) Within 60 days of receiving written approval of an Edwards Aquifer protection plan, the applicant must submit, to the appropriate regional office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county record.

(4) The construction of a public street or highway is exempt from all deed recordation requirements.

(h) Term of approval. The executive director's approval of an Edwards Aquifer protection plan will expire two years after the date of initial issuance, unless prior to the expiration date, substantial construction related to the approved plan has commenced. For purposes of this subsection, substantial construction means more than 10% of total construction has commenced. If a written request for an extension is filed under the provisions of this subsection, the approved plan will continue in effect until the executive director makes a determination on the request for an extension.

(1) A written request for an extension must be received not earlier than 60 days prior to the expiration date of an approved Edwards Aquifer protection plan or a previously approved extension. Requests for extensions are subject to fees outlined in §213.13 of this title (relating to Fees Related to Requests For Extensions).

(2) An executive director's approved extension will expire six months after the original expiration date of the approved Edwards Aquifer protection plan or a previously approved extension unless prior to the expiration date, commencement of construction, repair, or replacement related to the approved plan has occurred.

(3) An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50% of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the appropriate regional office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

(4) Any requests for extensions received by the executive director after the expiration date of an approved Edwards Aquifer protection plan or a previously approved extension will not be accepted. A new application for the purposes of this chapter must be submitted to the appropriate regional office with the appropriate fees for the review and approval by the executive director.

(5) An extension will not be granted if the proposed regulated activity or approved plan for the regulated activity(ies) under this chapter has changed from the regulated activity(ies) approved by the executive director.

(i) Legal transfer of property. Upon legal transfer of property, sewage collection systems, force mains, lift stations, underground storage tank system, or aboveground storage tank system, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

(j) Modification of previously approved plans. The holder of any approved Edwards Aquifer protection plan must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:

(1) any physical or operational modification of any water pollution abatement structure(s), including, but not limited to, ponds, dams, berms, sewage treatment plants, and diversionary structures;

(2) any change in the nature or character of the regulated activity from that which was originally approved or a change that would significantly impact the ability of the plan to prevent pollution of the Edwards Aquifer;

(3) any development of land previously identified as undeveloped in the original water pollution abatement plan;

(4) any physical modification of the approved organized sewage collection system;

(5) any physical modification of the approved underground storage tank system; or

(6) any physical modification of the approved aboveground storage tank system.

(k) Compliance. The holder of the approved or conditionally approved Edwards Aquifer protection plan is responsible for compliance with this chapter and any special conditions of the approved

plan through all phases of plan implementation. Failure to comply with any condition of the executive director's approval is a violation of this chapter and is subject to administrative rule or orders and penalties as provided under §213.10 of this title (relating to Enforcement). Such violations may also be subject to civil penalties and injunction.

Adopted August 10, 2005 Effective September 1, 2005

§213.5. Required Edwards Aquifer Protection Plans, Notification, and Exemptions.

(a) Required plans. A plan must be submitted for the following, as appropriate:

(1) a water pollution abatement plan under subsection (b) of this section to conduct regulated activities on the recharge zone not covered by subsections (c), (d), or (e) of this section;

(2) an organized sewage collection system plan under subsection (c) of this section for rehabilitation or construction related to existing or new organized sewage collection systems on the recharge zone;

(3) an underground storage tank facility plan for static hydrocarbon and hazardous substance storage under subsection (d) of this section for the construction or rehabilitation of an underground storage tank system; including tanks, piping, and related systems located on the recharge zone or transition zone; and

(4) an aboveground storage tank facility plan for static hydrocarbon and hazardous substance storage under subsection (e) of this section for the construction or rehabilitation of an aboveground storage tank system; including tanks, piping, and related systems, for the storage of hydrocarbon or hazardous substance located on the recharge zone or transition zone.

(b) Water pollution abatement plan. A water pollution abatement plan must contain the following information.

(1) Application. The information required under §213.4 of this title (relating to Application Processing and Approval) is part of the plan and must be filed with the executive director at the appropriate regional office.

(2) Site location.

(A) Location data and maps must include a legible road map with directions, including mileage, which would enable the executive director to locate the site for inspection.

(B) A general location map must include:

(i) the site location on a copy (or spliced composite of copies, if necessary) of an official recharge zone map(s) with quadrangle name(s) and recharge and transition zone boundaries clearly labeled; and

(ii) a drainage plan, shown on the recharge zone map, indicating all paths of drainage from the site.

(C) A site plan with a minimum scale of one inch to 400 feet must show:

(i) the 100-year floodplain boundaries (if applicable);

(ii) the layout of the development showing existing and finished contours as appropriate, but not greater than ten-foot contour intervals;

(iii) the location of all known wells (including, but not limited to, water wells, oil wells, and unplugged and abandoned wells);

(iv) the location of any sensitive feature on the site of the proposed regulated activity as identified in the geologic assessment under paragraph (3) of this subsection;

(v) the drainage patterns and approximate slopes anticipated after major grading activities;

(vi) areas of soil disturbance and areas which will not be disturbed;

(vii) locations of major structural and nonstructural controls identified in the technical report;

(viii) locations where stabilization practices are expected to occur;

(ix) surface waters (including wetlands); and

(x) locations where stormwater discharges to a surface water or a sensitive feature.

(3) Geologic assessment. For all regulated activities, the applicant must submit a geologic assessment report prepared by a geologist describing the site-specific geology. The report must identify all potential pathways for contaminant movement to the Edwards Aquifer. Single-family residential subdivisions constructed on less than ten acres are exempt from this requirement. The geologic assessment report must be signed, sealed, and dated by the geologist preparing the report.

(A) The geologic assessment must include a geologic map, at site-plan scale, illustrating:

(i) the outcrop of surface geologic units; and

(ii) all geologic and manmade features, specifically identifying:

(I) caves;

(II) sinkholes;

(III) faults;

(IV) permeable fractures;

(V) solution zones;

(VI) surface streams; and

(VII) other sensitive features.

(B) The geologic assessment must contain a stratigraphic column showing, at a minimum, formations, members, and thicknesses.

(C) The geologic assessment must contain a description and evaluation of all geologic and manmade features, on forms provided by, or approved by, the executive director. The assessment must determine which of these features are sensitive features. The assessment must include:

(i) the identification of each geologic or manmade feature, with a cross-reference to the site-plan map coordinates; and

(ii) the type of geologic or manmade feature including, but not limited to:

(I) sinkholes;

(II) caves;

(III) faults;

(IV) wells;

(V) surface streams; or

(VI) potentially permeable fractures and solution zones.

(D) The geologic assessment must contain a narrative assessment of site-specific geology. The assessment must detail the potential for fluid movement to the Edwards Aquifer and include a discussion of the stratigraphy, structure, and karstic characteristics of the site.

(E) The geologic assessment must contain a narrative description of soil units and a soil profile, including thickness and hydrologic characteristics.

(4) Technical report.

(A) The technical report must address the following issues.

(i) The report must describe the nature of the regulated activity (such as residential, commercial, industrial, or utility), including:

(I) the size of the site in acres;

(II) the projected population for the site;

(III) the amount and type of impervious cover expected after construction is complete, such as paved surface or roofing;

(IV) the amount of surface expected to be occupied by parking lots; and

(V) other factors that could affect surface water and groundwater quality.

(ii) The report must describe the volume and character of wastewater expected to be produced. Wastewater generated at a site should be characterized as either domestic or industrial, or if commingled, by approximate percentages of each type.

(iii) The report must describe the volume and character of stormwater runoff expected to occur. Estimates of stormwater runoff quality and quantity should be based on area and type of impervious cover, as described in clause (i) of this subparagraph. An estimate of the runoff coefficient of the site for both the pre-construction and post-construction conditions should be included in the report.

(iv) The report must describe any activities or processes which may be a potential source of contamination.

(v) The report must describe the intended sequence of major activities which disturb soils for major portions of the site (e.g., grubbing, excavation, grading, utilities and infrastructure installation).

(vi) The report must contain estimates of the total area of the site that is expected to be disturbed by excavation, grading, or other activities.

(vii) The report must contain the name of the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project.

(B) The technical report must describe the temporary best management practices (BMPs) and measures that will be used during and after construction. The technical report must clearly describe for each major activity identified in subparagraph (A)(v) of this paragraph appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

(i) BMPs and measures must prevent pollution of surface water, groundwater, or storm water that originates upgradient from the site and flows across the site as provided under this paragraph.

(ii) BMPs and measures must prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site as provided under this paragraph.

(iii) BMPs and measures must prevent pollutants from entering surface streams, sensitive features, or the aquifer as provided under this paragraph.

(iv) To the maximum extent practicable, BMPs and measures must maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

(I) The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

(II) A request to temporarily seal must include a justification as to why no reasonable and practicable alternative exists. The request will be evaluated by the executive director on a case-by-case basis.

(v) Temporary BMPs and measures must meet the requirements contained in subparagraph (D)(i) of this paragraph.

(vi) The report must include a plan for the inspection of temporary BMPs and measures and for their timely maintenance, repair, and, if necessary, retrofit.

(vii) Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure must be prepared by or under the direct supervision of a Texas licensed professional engineer. All construction plans and design information must be signed, sealed, and dated by the Texas licensed professional engineer.

(viii) Pilot-scale field testing (including water quality monitoring) may be required for BMPs that are not contained in technical guidance recognized by, or prepared by, the executive director.

(ix) The construction-phase BMPs for erosion and sediment controls should be designed to retain sediment on site to the extent practicable.

(x) All control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicates a control has

been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

(xi) If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

(xii) Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%.

(xiii) Litter, construction debris, and construction chemicals exposed to storm water shall be prevented from becoming a pollutant source for storm water discharges (e.g., screening outfalls, picked up daily).

(C) The technical report must describe the permanent BMPs and measures that will be used during and after construction is completed.

(i) BMPs and measures must prevent pollution of surface water, groundwater, or storm water that originates upgradient from the site and flows across the site.

(ii) BMPs and measures must prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated storm water runoff from the site.

(iii) BMPs and measures must prevent pollutants from entering surface streams, sensitive features, or the aquifer.

(iv) To the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

(I) The permanent sealing of, or diversion of, flow from a naturally occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure should be avoided.

(II) A request to seal a naturally occurring sensitive feature must include a justification as to why no reasonable and practicable alternative exists. The request will be evaluated by the executive director on a case-by-case basis.

(v) Permanent BMPs and measures must meet the requirements contained in subparagraph (D)(ii) of this paragraph.

(vi) Construction plans and design calculations for the proposed permanent BMPs and measures must be prepared by, or under the direct supervision of, a Texas licensed professional engineer. All construction plans and design information must be signed, sealed, and dated by the Texas licensed professional engineer.

(vii) The technical report must include a plan for the inspection of the permanent BMPs and measures and for their timely inspection, maintenance, repair, and, if necessary, retrofit. The plan must be prepared and certified by the engineer designing the permanent BMPs and measures. The plan must be signed by the owner or responsible party.

(viii) Pilot-scale field testing (including water quality monitoring) may be required for BMPs that are not contained in technical guidance recognized by, or prepared by, the executive director.

(I) When pilot-scale field testing of an innovative technology (including water quality monitoring) is required, only one pilot site will be approved.

(II) No additional approvals will be granted until the pilot study is complete and the applicant demonstrates adequate protection of the Edwards Aquifer.

(III) If the innovative technology demonstrates adequate protection of the Edwards Aquifer, additional units may be approved for use as permanent pollution abatement measures on the Edwards Aquifer recharge zone.

(IV) If the innovative technology demonstrates inadequate protection of the Edwards Aquifer, a retrofit of the pollution abatement measure may be required to achieve compliance with requirements under subparagraph (D) of this paragraph and no additional units will be approved for use on the Edwards Aquifer recharge zone.

(D) Requirements for BMPs and measures.

(i) Temporary BMPs.

(I) The technical report must include a description of interim and permanent stabilization practices for the site, including a schedule of when the practices will be implemented. Stabilization practices may include, but are not limited to: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures.

(-a-) The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur; the dates when construction activities temporarily or permanently cease on a portion of the site; and the dates when stabilization measures are initiated.

(-b-) Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures

do not have to be initiated on that portion of site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

(II) The technical report must include a description of structural practices to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable. Structural practices may include, but are not limited to: silt fences, earth dikes, drainage swales, sediment traps, checks dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and sediment basins. Placement of structural practices in floodplains should be avoided to the degree attainable.

(-a-) For common drainage locations that serve an area with ten or more acres disturbed at one time, a sediment basin that provides storage for a calculated volume of runoff from a two-year, 24-hour storm from each disturbed acre drained, or equivalent control measures, shall be provided where attainable until final stabilization of the site. Where no such calculation has been performed, a sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent control measures, shall be provided where attainable until final stabilization of the site. When computing the number of acres draining into a common location it is not necessary to include flows from off-site areas and flows from on-site areas that are either undisturbed or have undergone final stabilization where such flows are diverted around both the disturbed area and the sediment basin.

(-b-) In determining whether installing a sediment basin is attainable, the applicant may consider factors such as site soils, slope, and available area on site. For drainage locations which serve ten or more disturbed acres at one time and where a sediment basin or equivalent controls is not attainable, smaller sediment basins and/or sediment traps should be used. Where neither the sediment basin nor equivalent controls are attainable due to site limitations, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries of the construction area and for those side slope boundaries deemed appropriate as dictated by individual site conditions. The executive director encourages the use of a combination of sediment and erosion control measures in order to achieve maximum pollutant removal.

(-c-) For drainage locations serving less than ten acres, smaller sediment basins and/or sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the construction area unless a sediment basin providing storage for a calculated volume of runoff from a two-year, 24-hour storm or 3,600 cubic feet of storage per acre drained is provided. The executive director encourages the use of a combination of sediment and erosion control measures in order to achieve maximum pollutant removal.

(ii) Permanent BMPs and measures.

(I) BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction. These practices and measures must be designed, constructed, operated, and maintained to insure that 80% of the incremental

increase in the annual mass loading of total suspended solids from the site caused by the regulated activity is removed. These quantities must be calculated in accordance with technical guidance prepared or accepted by the executive director.

(II) Owners of permanent BMPs and measures must insure that the BMPs and measures are constructed and function as designed. A Texas licensed professional engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

(III) Where a site is used for low density single-family residential development and has 20% or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by §213.4(g) of this title, may no longer apply and the property owner must notify the appropriate regional office of these changes.

(IV) The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by §213.4(g) of this title, may no longer apply and the property owner must notify the appropriate regional office of these changes.

(E) The technical report must describe measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development. The measures should address the following:

(i) increased stream flashing;

(ii) the creation of stronger flows and in-stream velocities; or

(iii) other in-stream effects caused by the regulated activity which increase erosion that results in water quality degradation.

(F) The technical report must describe the method of wastewater disposal from the site.

(i) If wastewater is to be disposed of by conveyance to a sewage treatment plant for treatment and disposal, the existing or proposed treatment facility must be identified.

(ii) If wastewater is to be disposed of by an on-site sewage facility, the application must include a written statement from the appropriate authorized agent, stating that the site is suitable for the use of private sewage facilities and will meet the special requirements for on-site sewage facilities located on the Edwards Aquifer recharge zone as specified under Chapter 285 of this title (relating to On-Site Sewage Facilities), or identifying those areas that are not suitable.

(G) The technical report must describe the measures that will be used to contain any spill of hydrocarbons or hazardous substances such as on a roadway or from a pipeline or from temporary aboveground storage of 250 gallons or more.

(i) Temporary storage facilities are those used on site for less than one year.

(ii) Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

(5) Responsibility for maintenance of permanent BMPs and measures after construction is complete.

(A) The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

(B) A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer.

(C) This paragraph applies to:

(i) multiple single-family residential developments, multi-family residential; and

(ii) non-residential developments such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

(c) Organized sewage collection systems.

(1) No person may commence rehabilitation or construction related to an existing or new organized sewage collection system on the recharge zone, until final design plans, specifications, and an engineering report, as specified in Chapter 317 of this title (relating to Design Criteria for Sewerage Systems) and appropriate special requirements of this section, have been filed with and approved by the executive director.

(2) General design of sewage collection systems. Design of new sewage collection systems on the recharge zone must comply with Chapter 317 of this title.

(3) Special requirements for sewage collection systems. In addition to the requirements in paragraph (2) of this subsection, sewage collection systems on the recharge zone must meet the following special requirements.

(A) Manhole rehabilitation or construction. All manholes rehabilitated or constructed after March 21, 1990, must be watertight, with watertight rings and covers and must be constructed and tested to meet the requirements of §317.2(c)(5)(H) of this title (relating to Sewage Collection System).

(B) Piping for gravity and pressurized collection systems. Compliance with the following is required, unless local regulations dictate more stringent standards:

(i) for gravity collection systems, all PVC pipe must have a Standard Dimension Ratio (SDR) of 35 or less and meet the requirements of §317.2(a) - (c)(4) of this title; and

(ii) for all pressurized sewer systems, all PVC pipe must have a minimum working pressure rating of 150 pounds per square inch and meet the requirements of §317.2(d)(2) - (4) and §317.3(d)(5) - (7) of this title (relating to Sewage Collection System and Lift Stations).

(C) Lift station design. Lift stations must be designed and constructed to ensure that bypassing of any sewage does not occur. All lift stations must be designed to meet the requirements of §317.2(d) and §317.3 of this title. A lift station application must include final construction plans and a design report prepared by or under the direct supervision of a Texas licensed professional engineer. All design information must be signed, sealed, and dated by a Texas licensed professional engineer.

(D) Certification of new sewage collection system lines by a Texas licensed professional engineer. Owners of sewage collection systems must insure that all new gravity sewer system lines having a diameter greater than or equal to six inches and all new force mains are tested for leakage following construction. Such lines must be certified by a Texas licensed professional engineer to meet the appropriate requirements of §317.2 of this title. The engineer must retain copies of all test results which must be made available to the executive director upon request. The engineer must certify in writing that all wastewater lines have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system. Following the completion of the new sewer lines and manholes, they must be tested every five years thereafter in accordance with subparagraph (E) of this paragraph.

(E) Testing of existing sewer lines. Owners of sewage collection systems must insure that all existing sewer lines having a diameter greater than or equal to six inches, including private service laterals, manholes, and connections, are tested to determine types and locations of structural damage and defects such as offsets, open joints, or cracked or crushed lines that would allow exfiltration to occur. Existing manholes and lift station wet wells must be tested using methods for new structures which are approved by the executive director.

(i) Testing of all sewage collection systems must be conducted every five years after being put into use. Any sewage collection system in place as of March 21, 1990 must

have commenced and completed the first round of five-year testing. Every five years, existing sewage collection systems must be tested to determine types and locations of structural damage and defects such as offsets, open joints, or cracked or crushed lines that would allow exfiltration to occur. These test results must be certified by a Texas licensed professional engineer. The test results must be retained by the plan holder for five years and made available to the executive director upon request. The use of one of the following methods will satisfy the requirements for the five-year testing of existing sewer lines.

(I) In-place deflection testing must meet the requirements of §317.2(a)(4)(C) of this title. No pipe shall exceed a deflection rate of 5.0%.

(II) Internal line inspections, using a color television camera to verify that the lines are free of structural damage such as offsets, open joints, or cracked or crushed lines, that would allow exfiltration to occur, are acceptable. The use of black and white television equipment may be used following demonstration to the executive director that an acceptable inspection can be performed as provided in subclause (IV) of this clause.

(III) In-line smoke testing is acceptable only for the testing of private service laterals.

(IV) Testing methods other than those listed in this subsection must be approved by the executive director prior to initiating the sewer line testing.

(ii) Except as otherwise provided in an enforcement order of the commission, as soon as possible, but at least within one year of detecting defects, repairs to the sewage collection system must be completed by the system's owner. However, all leakage must be immediately contained to prevent any discharge to water in the state or pollution of the Edwards Aquifer whether necessary repairs have been completed or not. Leakage is a violation of Texas Water Code, §26.121 and these rules are not intended to excuse such unlawful discharge of waste into or adjacent to water in the state. All repairs must be certified by a Texas licensed professional engineer. Repairs must be tested within 45 days of completion using the methods described in clause (i) of this subparagraph. Results must be submitted to the appropriate regional office within 30 days of testing.

(F) Blasting for sewer line excavation. Blasting for sewer line excavation must be done in accordance with appropriate criteria established by the National Fire Protection Association. Should such blasting result in damage to an existing or newly completed sewer line or any of its appurtenances, the owner of the sewer system and appurtenances must repair and retest the damaged sewer line and its appurtenances immediately. The use of sand for pipe embedment or backfill in blasted rock is prohibited.

(G) Sewer line stub outs. New collection system lines must be constructed with stub outs for the connection of anticipated extensions. The location of such stub outs must be marked on the ground such that their location can be easily determined at the time of connection of the proposed extensions. All stub outs must be sealed with a manufactured cap to prevent leakage. Extensions that were not anticipated at the time of original construction or that are to be connected to an existing sewer line not furnished with stub outs must be connected using a manufactured saddle in accordance with accepted plumbing techniques.

(i) Main line stub outs. Manholes must be placed at the end of all sewer lines that will be extended at a future date, as specified in §317.2(c)(5) of this title. If the main line is to be extended within one year, a variance to allow the use of a stub out until the line is extended will be considered on a case-by-case basis. At the time of original construction, new stub outs must be constructed sufficiently to extend beyond the end of the street pavement. Stub outs that were not anticipated at the time of original construction must enter the manhole using a bored or drilled hole. Chiseling or hammering to enter a manhole is prohibited.

(ii) Private service lateral stub outs. Such stub outs must be manufactured using wyes or tees that are compatible in size and material with both the sewer line and the extension. Private service lateral stub outs that were not anticipated at the time of original construction must be connected using a manufactured saddle in accordance with accepted plumbing techniques.

(H) Locating sewer lines within a five-year floodplain. Sewer lines may not be located within the five-year floodplain of a drainageway, unless an exemption is granted by the executive director. If the applicant demonstrates to the executive director that such location is unavoidable, and the area is subject to inundation and stream velocities which could cause erosion and scouring of backfill, the trench must be capped with concrete to prevent scouring of backfill, or the sewer lines must be encased in concrete. All concrete must have a minimum thickness of six inches.

(I) Inspection of private service lateral connections. After installing and prior to covering and connecting a private service lateral to an organized sewage collection system, a Texas licensed professional engineer, Texas registered sanitarian, or appropriate city inspector must inspect the private service lateral and the connection to the collection system and certify that construction conforms with the applicable provisions of this subsection and local plumbing codes. Private service laterals may only be connected to approved sewage collection systems.

(J) Embedment materials. Embedment materials must meet the specification for bedding contained in §317.2(a)(5) of this title.

(K) Sewer lines bridging caverns or other sensitive features. Sewer lines that bridge caverns or sensitive features must be constructed in a manner that will maintain the structural integrity of the line. When such geologic features are encountered during construction, the location and extent of those features must be assessed by a geologist and must be reported to the appropriate regional office in writing within two working days of discovery. Notification and inspection must comply with the requirements under subsection (f) of this section.

(L) Erosion and sedimentation control. A temporary erosion and sedimentation control plan must be included with all construction plans. All temporary erosion and sedimentation controls must be installed prior to construction, must be maintained during construction, and must be removed when sufficient vegetation is established to control the erosion and sedimentation and the construction area is stabilized.

(M) Alternative sewage collection systems. The executive director may approve an alternative procedure which is technically justified; signed, sealed, and dated by a Texas licensed

professional engineer indicating equivalent environmental protection; and which complies with the requirements of §317.2(d) of this title.

(N) Required corrective action. Notwithstanding compliance with the requirements of subparagraphs (A) - (M) of this paragraph, sewage collection systems must operate in a manner that will not cause pollution of the Edwards Aquifer. Any failure must be corrected in a manner satisfactory to the executive director.

(4) Contents of organized sewage collection system plan.

(A) Application. For organized sewage collection systems, the information required under §213.4 of this title must be filed with the executive director at the appropriate regional office.

(B) Narrative description of proposed organized sewage collection system. A narrative report must include, at a minimum, a geographic description and anticipated type of development within the sewage collection system service area.

(C) Geologic assessment. A geologic assessment, as described in subsection (b)(3) of this section, must be performed by a geologist along the path of the proposed sewer line(s), plus 50 feet on each side of the proposed sewer line(s). The geologic assessment report must be signed, sealed, and dated by the geologist preparing the report.

(D) Technical report. For an organized sewage collection system, a technical report must be submitted on forms provided by, or approved by, the executive director. The technical report must contain the information requested in the following subsections of this section: (b)(4)(A)(ii) and (iv), (B), (D)(i), (F)(i), and (G). A technical report for a water pollution abatement plan submitted under subsection (b) of this section satisfies this requirement, provided it properly addresses the proposed sewage collection system.

(E) Plans and specifications. Plans and specifications addressing all the requirements in paragraphs (2) and (3) of this subsection, must include at a minimum:

(i) a map showing the location of the organized sewage collection system layout in relation to recharge zone boundaries;

(ii) a map showing the location of the organized sewage collection system layout overlaid by topographic contour lines, using a contour interval of not greater than ten feet, and showing the area within both the five-year floodplain and the 100-year floodplain of any drainage way;

(iii) construction documents prepared by, or under the supervision of, a Texas licensed professional engineer, which have also been signed, sealed, and dated by that Texas licensed professional engineer, at a minimum, must include:

(I) plan and profile views of the collection system;

(II) construction details of collection system components;

(III) specifications for all collection system components; and

(IV) proposed pollution abatement measures for sensitive features identified along the path of the proposed sewer line.

(d) Static hydrocarbon and hazardous substance storage in underground storage tanks system.

(1) Standards for underground storage tank systems. New or replacement systems for the underground storage of static hydrocarbons or hazardous substances must be of double-walled or an equivalent method approved by the executive director. Methods for detecting leaks in the inside wall of a double-walled system must be included in the facility's design and construction. The leak detection system must provide continuous monitoring of the system and must be capable of immediately alerting the system's owner of possible leakages.

(A) Installation. All underground hydrocarbon and hazardous substance storage tank systems must be installed by a person possessing a valid certificate of registration in accordance with the requirements of Chapter 334, Subchapter I of this title (relating to Underground Storage Tank On-Site Supervisor Licensing and Contractor Registration).

(B) Siting. Any new underground hydrocarbon and hazardous substance storage tank system that does not incorporate a method for tertiary containment must be located a minimum horizontal distance of 150 feet from any domestic, industrial, or irrigation well, or other sensitive feature as determined under the geologic assessment at the time of construction or replacement under paragraph (2)(C) of this subsection or the tankhold inspection under subsection (f)(2)(B) of this section. This method of tertiary containment also applies to the placement of a tank system within 150 feet of a public water supply well without a sanitary control easement of 150 feet as defined in §290.41(c)(1)(F) of this title (relating to Water Sources).

(2) Contents of an underground storage tank facility plan. An underground storage tank facility plan must, at a minimum, contain the following information.

(A) Application. The information required under §213.4 of this title must be filed with the executive director at the appropriate regional office.

(B) Site location map. A site location map as specified in subsection (b)(2) of this section including a legible road map, a general location map, and a site plan, must be submitted as part of the plan.

(C) Geologic assessment. For all facilities located on either the recharge zone or transition zone, a geologic assessment prepared by a geologist, as described in subsection (b)(3) of this section, must be submitted for the site. The geologic assessment report must be signed, sealed, and dated by the geologist preparing the report.

(D) Technical report. For all facilities, located on either the recharge zone or transition zone, a technical report must be submitted on forms provided by, or approved by, the executive director. The technical report must contain the information requested in subsection (b)(4)(B) and (C) and (5) of this section. A technical report for a water pollution abatement plan submitted under subsection (b) of this section satisfies this requirement, provided it properly addresses the proposed underground storage tank facility.

(e) Static hydrocarbon and hazardous substance storage in an aboveground storage tank facility.

(1) Design standards. Systems used for the temporary and permanent aboveground storage of static hydrocarbon and hazardous substance must be constructed within controlled drainage areas that are sized to capture one and one-half (1-1/2) times the storage capacity of the system. The controlled drainage area must be constructed of, and in a material impervious to, the substance(s) being stored, and must direct spills to a convenient point for collections and recovery. Any spills from storage tank facilities must be removed from the controlled drainage area for disposal within 24 hours of the spill.

(2) Contents of an aboveground storage tank facility plan. A permanent aboveground storage tank facility plan must contain, at a minimum, the following information.

(A) Application. For an aboveground storage tank facility, the information required under §213.4 of this title must be filed with the executive director at the appropriate regional office.

(B) Site location map. A site location map as specified in subsection (b)(2) of this section, including a legible road map, a general location map, and a site plan, must be submitted as part of the plan for a permanent facility.

(C) Geologic assessment. For all facilities located on either the recharge zone or transition zone, a geologic assessment prepared by a geologist, as described in subsection (b)(3) of this section, must be submitted for the area containing the aboveground storage tank system. The geologic assessment report must be signed, sealed, and dated by the geologist preparing the report.

(D) Technical report. For all facilities located on either the recharge zone or transition zone, a technical report must be submitted on forms provided by, or approved by, the executive director. The technical report must contain the information requested in subsection (b)(4)(B) and (C) and (5) of this section. A technical report for a water pollution abatement plan submitted under subsection (b) of this section satisfies this requirement, provided it properly addresses the proposed aboveground storage tank facility.

(3) A description of measures that will be used to contain any spill of hydrocarbons or hazardous substances from temporary storage of 250 gallons or more must be included with the plan unless described under subsection (b)(4)(G) of this section. Any new temporary aboveground hydrocarbon and hazardous substance storage tank system must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

(4) Exemptions from this section.

(A) Equipment used to transmit electricity that utilizes oil for insulation or cooling purposes, including transformers and oil circuit breakers, are exempt from this subsection. Construction of supporting structures is a regulated activity for which a water pollution abatement plan under subsection (a)(1) of this section is required.

(B) Permanent storage facilities with a cumulative storage capacity of less than 500 gallons are exempt from this section.

(f) Notification and inspection.

(1) The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation. Notification must be given to the appropriate regional office no later than 48 hours prior to commencement of the regulated activity.

(A) Written notification must include:

(i) the date on which the regulated activity will commence;

(ii) the name of the approved plan for the regulated activity; and

(iii) the name of the prime contractor and the name and telephone number of the contact person.

(B) The executive director will use the notification to determine if the applicant is eligible for an extension of an approved plan. Construction will not be considered to have commenced until written notification is received by the appropriate regional office.

(2) If any sensitive feature is discovered during construction, replacement, or rehabilitation, all regulated activities near the sensitive feature must be suspended immediately.

(A) The holder of an approved Edwards Aquifer protection plan must immediately notify the appropriate regional office of any sensitive features encountered during construction. This notice must be given before continuing construction.

(B) Regulated activities near the sensitive feature may not proceed until the executive director has reviewed a geologic assessment report prepared by a geologist that consists of information required under subsection (b)(3)(C) and (D) of this section for the sensitive feature and has reviewed and approved the methods proposed to protect the sensitive feature and the Edwards Aquifer from potentially adverse impacts to water quality. The geologic assessment report must be signed, sealed, and dated by the geologist preparing the report.

(C) The holder of an approved sewage collection system plan, must meet the following.

(i) Upon completion of any lift station excavation, a geologist must certify that the excavation has been inspected for the presence of sensitive features. The certification must be signed, sealed, and dated by the geologist preparing the certification. Certification that the excavation has been inspected must be submitted to the appropriate regional office.

(I) Further activities may not proceed until the executive director has reviewed and approved the methods proposed to protect any sensitive feature and the Edwards Aquifer from potentially adverse impacts to water quality from the lift station.

(II) Construction may continue if the geologist certifies that no sensitive feature or features were present.

(ii) The applicant must submit a plan for ensuring the structural integrity of the sewer line or for modifying the proposed collection system alignment around the feature. The plan must be certified by a Texas licensed professional engineer. These plans must be submitted to the appropriate regional office for review and approval.

(D) For an approved underground storage tank facility plan, a geologist must certify that a completed tankhold excavation has been inspected for the presence of sensitive features. The certification must be signed, sealed, and dated by the geologist preparing the certification.

(i) Certification that the tankhold excavation has been inspected must be submitted to the appropriate regional office.

(ii) If a sensitive feature is discovered, the applicant must propose methods to protect the feature and the Edwards Aquifer from potentially adverse impacts to water quality from the underground storage tank system. Installation activities may not proceed until the executive director has reviewed and approved the proposed methods. The protection methods must be consistent with subsection (d)(1)(B) of this section.

(iii) Construction may continue if the geologist certifies that no sensitive feature or features were present.

(3) The executive director must review methods or plans proposed to protect sensitive features and the Edwards Aquifer from potentially adverse impacts to water quality. This review will be completed within one week of receiving a method or plan. Regulated activities near the sensitive feature may not continue until the executive director has approved the proposed methods or plans.

(g) On-site sewerage systems. On-site sewerage systems located on the recharge zone are subject to §285.40 of this title (relating to OSSFs on the Recharge Zone of the Edwards Aquifer) and other applicable provisions contained in Chapter 285 of this title. Systems must be designed, installed, maintained, repaired, and replaced in accordance with Chapter 285 of this title.

(h) Exemption.

(1) Regulated activities exempt from the Edwards Aquifer protection plan application requirements under this section are:

(A) the installation of natural gas lines;

(B) the installation of telephone lines;

(C) the installation of electric lines;

(D) the installation of water lines;

(E) the installation of other utility lines which are not designed to carry and will not carry the following:

(i) pollutants;

(ii) storm water runoff;

(iii) sewage effluent; or

(iv) treated effluent from a wastewater treatment facility.

(2) An individual land owner who seeks to construct his/her own single-family residence or associated residential structures on the site is exempt from the Edwards Aquifer protection plan application requirements under this section, provided that he/she does not exceed 20% impervious cover on the site.

(3) Temporary erosion and sedimentation controls are required to be installed and maintained for exempted activities on the recharge zone.

(4) All temporary erosion and sedimentation controls:

(A) must meet the requirements contained in subsection (b)(4)(D)(i) of this section;

(B) must be installed prior to construction;

(C) must be maintained during construction; and

(D) may be removed only when vegetation is established and the construction area is stabilized.

(5) The executive director may monitor storm water discharges from these projects to evaluate the adequacy of the temporary erosion and sedimentation control measures. Additional protection will be required if the executive director determines that these controls are inadequate to protect water quality.

Adopted July 23, 2003 Effective September 1, 2003

§213.6. Wastewater Treatment and Disposal Systems.

(a) General.

(1) New industrial and municipal wastewater discharges into or adjacent to water in the state that would create additional pollutant loading are prohibited on the recharge zone.

(2) Increases in existing discharges into or adjacent to water in the state that would increase or add new pollutant loading are prohibited on the recharge zone.

(3) Existing permits may be renewed for the same discharge volumes and with the same conditions and authorizations specified in the permit. Permits will not be renewed if the facility becomes non-compliant, as defined in Chapter 70 of this title (relating to Enforcement).

(4) New land application wastewater treatment plants located on the recharge zone must be designed, constructed, and operated such that there are no bypasses of the treatment facilities or any discharges of untreated or partially treated wastewater.

(5) Design of wastewater treatment plants must be in accordance with Chapter 317 of this title (relating to Design Criteria for Sewerage Systems).

(b) Land application systems.

(1) Except for licensed private sewage facilities, land application systems that rely on percolation for wastewater disposal are prohibited on the recharge zone.

(2) Wastewater disposal systems for disposal of wastewater on the recharge zone utilizing land application methods, such as evaporation or irrigation, will be considered on a case-by-case basis. At a minimum, those systems must attain secondary treatment as defined in Chapter 309 of this title (relating to Effluent Limitations).

(3) Existing permits may be renewed for the same discharge volumes and with the same conditions and authorizations specified in the permit unless the facility becomes non-compliant, as defined in Chapter 70 of this title (relating to Enforcement).

(c) Discharge upstream from the recharge zone.

(1) All new or increased discharges of treated wastewater into or adjacent to water in the state, other than industrial wastewater discharges, within zero to five (0 to 5) miles upstream from the recharge zone, at a minimum, shall achieve the following level of effluent treatment:

(A) five milligrams per liter of carbonaceous biochemical oxygen demand, based on a 30-day average;

(B) five milligrams per liter of total suspended solids, based on a 30-day average;

(C) two milligrams per liter of ammonia nitrogen, based on a 30-day average; and

(D) one milligram per liter of phosphorus, based on a 30-day average.

(2) All new or increased discharges into or adjacent to water in the state, other than industrial wastewater discharges, more than five miles but within ten miles upstream from the recharge zone and any other discharges that the agency determines may affect the Edwards Aquifer, at a minimum, must achieve the level of effluent treatment for 2N based on a 30-day average as set out in Table 1 of Chapter 309 of this title. More stringent treatment or more frequent monitoring may be required on a case-by-case basis.

(3) All discharges, other than industrial wastewater discharges, more than five (5) miles upstream from the recharge zone which enter the main stem or a tributary of Segment 1428 of the Colorado River, or Segment 1427, main stem Onion Creek, or a tributary of Onion Creek must comply with §311.43 of this title (relating to Effluent Requirements for All Tributaries of Segment 1428 of the Colorado River and Segment 1427, Onion Creek, and Its Tributaries, of the Colorado River Basin), and to §311.44 of this title (relating to Disinfection). More stringent treatment or more frequent monitoring may be required on a case-by-case basis.

(4) Any existing permitted industrial wastewater discharges within zero to ten (0 to 10) miles upstream of the recharge zone must, at all times, discharge effluent in accordance with permitted limits. Any application for new industrial wastewater discharge permits for facilities zero to ten (0 to 10) miles upstream of the recharge zone will be considered on a case-by-case basis, in accordance with appropriate discharge limits applicable to that industrial activity and with consideration of its proximity to the recharge zone.

Adopted September 23, 1998 Effective June 1, 1999

§213.7. Plugging of Abandoned Wells and Borings.

(a) All identified abandoned water wells, including injection, dewatering, and monitoring wells must be plugged pursuant to requirements of the Texas Department of Licensing and Regulation under 16 TAC Chapter 76 (relating to Licensing and Regulation of Water Well Drillers and Water Well Pump Installers) and all other locally applicable rules, as appropriate.

(b) Abandoned injection wells must be closed under the requirements of Chapter 331 of this title (relating to Underground Injection Control).

(c) All borings with depths greater than or equal to 20 feet must be plugged with a non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring or gravel. All borings less than 20 feet must be backfilled

with cuttings from the boring or gravel. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

Adopted September 23, 1998 Effective June 1, 1999

§213.8. Prohibited Activities.

(a) Recharge zone. The following activities are prohibited on the recharge zone:

(1) waste disposal wells regulated under Chapter 331 of this title (relating to Underground Injection Control);

(2) new feedlot/concentrated animal feeding operations regulated under Chapter 321 of this title (relating to Control of Certain Activities by Rule);

(3) land disposal of Class I wastes, as defined in §335.1 of this title (relating to Definitions);

(4) the use of a sewage holding tank as part of an organized sewage collection systems (lift stations approved by the executive director are not prohibited);

(5) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities); and

(6) new municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

(b) Transition zone. The following activities are prohibited on the transition zone:

(1) waste disposal wells regulated under Chapter 331 of this title;

(2) land disposal of Class I wastes, as defined in §335.1 of this title; and

(3) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title.

(c) Additional prohibitions. For applications submitted on or after September 1, 2001, injection wells that transect or terminate in the Edwards Aquifer, as defined in §331.19 of this title (relating to Injection Into or Through the Edwards Aquifer), are prohibited except as provided by §331.19 of this title.

Adopted October 10, 2002 Effective November 3, 2002

§213.9. Exceptions.

(a) Granting of exceptions. Exceptions to any substantive provision of this chapter related to the protection of water quality may be granted by the executive director if the requestor can demonstrate equivalent water quality protection for the Edwards Aquifer. No exception will be granted for a prohibited activity. Prior approval under this section must be obtained from the executive director for the exception to be authorized.

(b) Procedure for requesting an exception. A person requesting an exception to the provisions of this chapter relating to the protection of water quality must file an original and three copies of a written request with the executive director at the appropriate regional office stating in detail:

(1) the name, address, and telephone numbers of the requestor;

(2) site and project name and location;

(3) the nature of the exception requested;

(4) the justification for granting the exception as described in subsection (a) of this section; and

(5) any other pertinent information that the executive director requests.

(c) Fees related to requests for exceptions. A person submitting an application for an exception, as described in this section, must pay $500 for each exception request. The fee is due and payable at the time the exception request is filed, and should be submitted as described in §213.12 of this title (relating to Application Fees). If the exception request fee is not submitted in the correct amount, the executive director is not required to consider the exception request until the correct fee is submitted.

Adopted April 2, 2008 Effective April 24, 2008

§213.10. Enforcement.

Liability for penalties may result and may subject a noncompliant person to enforcement proceedings initiated by the executive director if there is failure to comply with:

(1) any provision of this chapter,

(2) an approved or conditionally approved Edwards Aquifer protection plan, or

(3) any applicable regulation or order of the commission issued pursuant to this chapter and in accordance with Chapter 26 and other relevant provisions of the Texas Water Code or Texas Health and Safety Code.

Adopted September 23, 1998 Effective June 1, 1999

§213.11. Groundwater Conservation Districts.

The commission recognizes the authorities, powers, and duties of special-purpose districts, created by the Texas Legislature or by the commission under Chapter 36 of the Texas Water Code, as groundwater conservation districts to conserve, prevent waste, and protect the quality of ground water. In order to foster cooperation with local governments, the commission encourages districts to assist it in the administration of this chapter by carrying out the following functions within the areal extent of their geographic jurisdiction which includes the recharge zone or transition zone:

(1) cooperating with licensing authorities in carrying out the provisions of this chapter,

(2) conducting such geologic investigations as are necessary to provide updated information to the executive director regarding the official maps of the recharge zone and transition zone,

(3) monitoring the quality of water in the Edwards Aquifer, and

(4) maintaining maps of regulated activities on the recharge or transition zone.

Adopted December 4, 1996 Effective December 27, 1996

§213.12. Application Fees.

The person submitting an application for approval or modification of any plan under this chapter must pay an application fee in the amount set forth in §213.14 of this title (relating to Fee Schedule). The fee is due and payable at the time the application is filed. The fee must be sent to the appropriate regional office or the cashier in the agency headquarters located in Austin, accompanied by an Edwards Aquifer Fee Application Form, provided by the executive director. Application fees must be paid by check or money order, payable to the "Texas Commission on Environmental Quality ." If the application fee is not submitted in the correct amount, the executive director is not required to consider the application until the correct fee is submitted.

Adopted August 10, 2005 Effective September 1, 2005

§213.13. Fees Related to Requests for Extensions.

The person submitting an application for an extension of an approval of any plan under this chapter must pay $150 for each extension request. The fee is due and payable at the time the extension request is filed, and should be submitted as described in §213.12 of this title (relating to Application Fees). If the extension fee is not submitted in the correct amount, the executive director is not required to consider the extension request until the correct fee is submitted. The extension request must be submitted to the appropriate regional office and must include a copy of the Edwards Aquifer protection plan and approval letter that is the subject of the extension request.

Adopted April 2, 2008 Effective April 24, 2008

§213.14. Fee Schedule.

(a) Water Pollution Abatement Plans. For water pollution abatement plans and modifications to those plans, the application fee shall be based on the classification and total acreage of the site where regulated activities will occur as specified in Table 1 of this subsection.

Figure 30 TAC §213.14(a)

Table 1

CLASSIFICATION/NUMBER OF ACRES	FEE
One single-family residential dwelling on less than 5 acres	$650
Multiple single-family residential dwellings and parks	
Less than 5 acres	$1,500
5 acres to less than 10 acres	$3,000
10 acres to less than 40 acres	$4,000
40 acres to less than 100 acres	$6,500
100 acres to less than 500 acres	$8,000
500 acres or more	$10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	
Less than 1 acre	$3,000
1 acre to less than 5 acres	$4,000
5 acres to less than 10 acres	$5,000
10 acres to less than 40 acres	$6,500
40 acres to less than 100 acres	$8,000
100 acres or more	$10,000

(b) Organized sewage collection systems. For sewage collection system plans and modifications, the application fee shall be based on the total number of linear feet of all lines for which approval is sought. The fee shall be $.50 per linear foot, with a minimum fee of $650 and a maximum fee of $6,500.

(c) Underground and aboveground storage tank facilities. For underground or permanent aboveground storage tank system facility plans and modifications, the application fee shall be based on the number of tanks or piping systems for which approval is sought. The fee shall be $650 per tank or piping system, with a minimum fee of $650 and a maximum fee of $6,500.

SUBCHAPTER B: CONTRIBUTING ZONE TO THE EDWARDS AQUIFER IN MEDINA, BEXAR, COMAL, KINNEY, UVALDE, HAYS, TRAVIS, AND WILLIAMSON COUNTIES
§§213.20 - 213.28
Effective April 24, 2008

§213.20. Purpose.

(a) The purpose of this subchapter is to regulate activities in the contributing zone to the Edwards Aquifer having the potential for polluting surface streams which recharge the Edwards Aquifer and to protect existing and potential beneficial uses of groundwater in the Edwards Aquifer.

(b) Nothing in this subchapter is intended to restrict the powers of the commission or any other governmental entity to prevent, correct, or curtail activities in the contributing zone that result or may result in pollution of the Edwards Aquifer or hydrologically connected surface waters. This subchapter is not exclusive and other rules also apply. In addition to the rules of the commission, the Texas general and individual permits for storm water discharges from construction activities and local ordinances and regulations providing for the protection of water quality may also apply to activities in the contributing zone.

(c) The executive director must review and act on contributing zone plans subject to this subchapter. The applicant or a person affected may file with the chief clerk a motion to overturn, under §50.139 (a), (b), and (d) - (g) of this title (relating to Motion to Overturn Executive Director's Decision), of the executive director's final action on a contributing zone plan or modification to a plan.

Adopted August 10, 2005 Effective September 1, 2005

§213.21. Applicability and Person or Entity Required to Apply.

(a) This subchapter applies only to the contributing zone as defined in §213.22 of this title (relating to Definitions) of the Edwards Aquifer. This subchapter is not intended to be applied to any other contributing zones for any other aquifers in the State of Texas.

(b) This subchapter applies only to regulated activities disturbing at least five acres, or regulated activities disturbing less than five acres which are part of a larger common plan of development or sale with the potential to disturb cumulatively five or more acres.

(c) Areas identified as contributing zone within the transition zone described by §213.22 of this title and delineated on the official recharge and transition zone maps of the agency as provided by §213.3 of this title (relating to Definitions), are subject to both the requirements of this subchapter governing the contributing zone and to the provisions of the recharge zone in §213.5(a)(3) and (4), (c)(3)(K), and (d) - (f) of this title (relating to Required Edwards Aquifer Protection Plans, Notification, and Exemptions); §213.6(a) and (b) of this title (relating to Wastewater Treatment and Disposal Systems); §213.7 of this title (relating to Plugging of Abandoned Wells and Borings); and to the transition zone provisions of §213.8(b) of this title (relating to Prohibited Activities).

(d) Unless otherwise provided under this subchapter, executive director approval of a contributing zone plan must be obtained prior to beginning construction of a new or additional regulated activity.

(e) Regulated activities are allowed to be conducted under this subchapter only by applicants who have a letter of contributing zone plan approval issued by the executive director. This letter is issued under §213.23 of this title (relating to Plan Processing and Approval).

(f) Applicable regulation for projects in progress when contributing zone or contributing zone within the transition zone designations are revised.

(1) For areas designated as contributing zone or contributing zone within the transition zone on official maps prior to the effective date of this subsection, and for which this designation did not change on the effective date of this subsection, all plans submitted to the executive director, on or after the effective date of this section, will be reviewed under all the provisions of this subchapter in effect on the date the plan is submitted.

(2) For areas that were newly designated as contributing zone or contributing zone within the transition zone on official maps on the effective date of this subsection, regulated activities will be considered to have commenced construction and will be regulated under the provisions of this chapter that were in effect at the time the plan was approved by the executive director if, on the effective date, all federal, state, and local approvals or permits required to begin physical construction have been obtained, and if either on-site construction directly related to the development has begun or construction commences within six months of the effective date of this section.

(3) The effective date of this subsection is September 1, 2005.

(g) Assumption of program by local government.

(1) A local governmental entity may assume the rights, duties, and responsibilities to review and either approve or deny contributing zone protection plan applications within its boundaries and monitor and enforce compliance with plans if the local government obtains certification from the executive director.

(2) In order to obtain certification, the local government must demonstrate:

(A) it has a water quality protection program equal to or more stringent than the rules contained in this subchapter, including, but not limited to, a program that:

(i) regulates activities covered under this chapter; and

(ii) has performance standards equal to or more protective of water quality;

(B) it has adopted ordinances or has other enforceable means sufficient to enforce the program throughout the local governmental entities jurisdiction; and

(C) it has adequate resources to implement and enforce the program.

(3) Upon approval of a request for certification under this subsection, the executive director shall enter into an agreement with the local governmental entity to provide for the terms and conditions of program assumption, including executive director oversight. Nothing in a certification or agreement shall affect the commission's ability to enforce its water quality protection rules or applicable state law.

(4) An agreement under paragraph (3) of this subsection shall not provide for the payment of fees required by this chapter to the local entity, and shall not provide for partial assumption of the program unless expressly authorized by the commission. Fees shall be paid to the commission.

(5) Certification must be for a term not to exceed five years, subject to renewal.

(6) Upon written notice, certification may be revoked or suspended by the executive director if the local entity does not meet the terms and conditions of the agreement provided under paragraph (4) of this subsection or fails to meet the criteria for certification provided under paragraph (2) of this subsection.

(7) A decision by the executive director under this subsection is not subject to appeal to the commission.

Adopted August 10, 2005 Effective September 1, 2005

§213.22. Definitions.

The definitions in Texas Water Code, §§26.001, 26.263, and 26.342, and in §213.3 of this title (relating to Definitions) apply to this subchapter. Those definitions have the same meaning unless the context in which they are used clearly indicates otherwise, or those definitions are inconsistent with the definitions listed in this section.

(1) **Best management practices** - Schedule of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to the Edwards Aquifer and hydrologically connected surface streams. Best management practices also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

(2) **Contributing zone** - The area or watershed where runoff from precipitation flows downgradient to the recharge zone of the Edwards Aquifer. The contributing zone is illustrated on Contributing Zone (Southern Part) for the Edwards Aquifer and Contributing Zone (Northern Part) for the Edwards Aquifer. The contributing zone is located upstream (upgradient) and generally north and northwest of the recharge zone for the following counties:

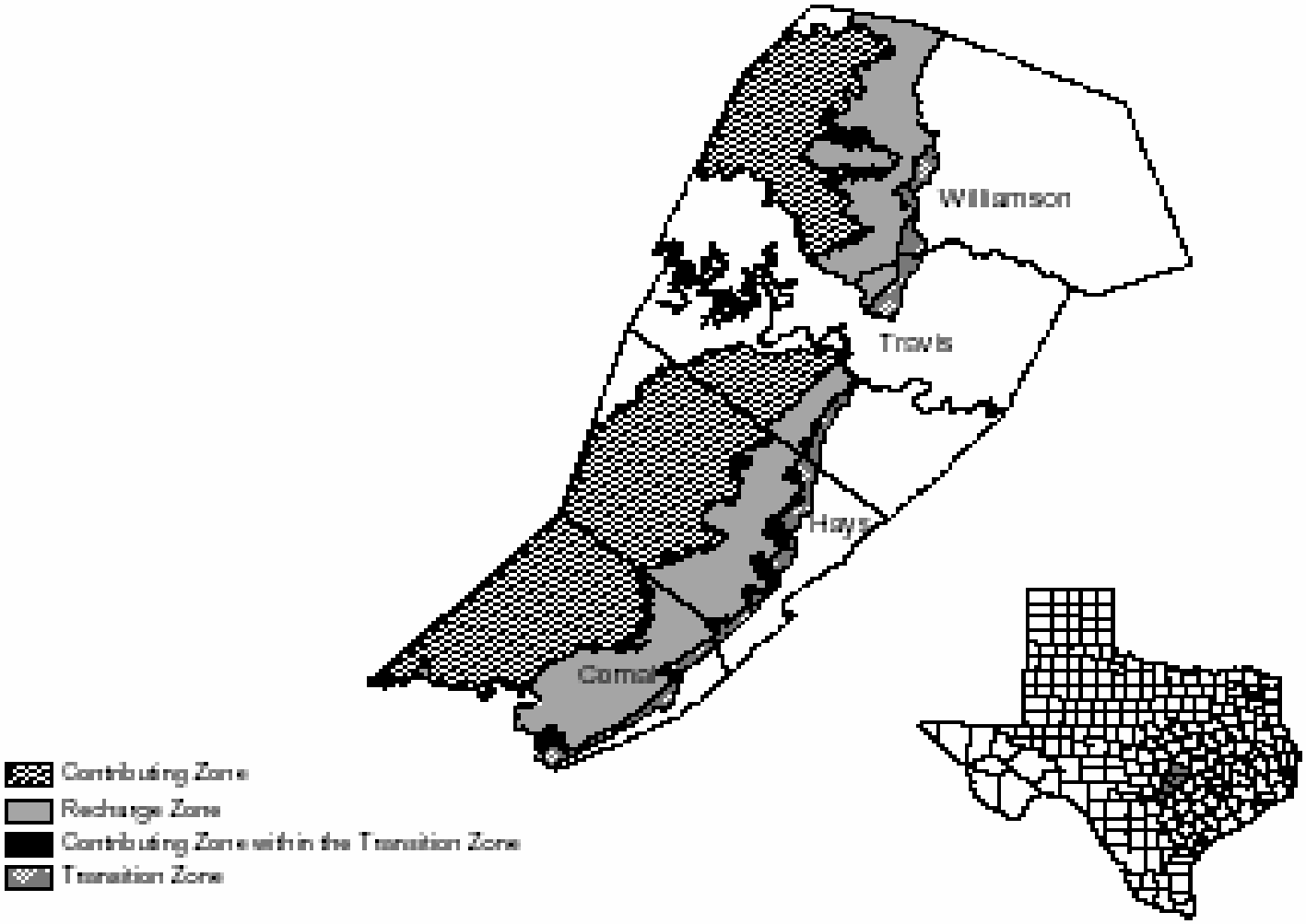


Figure 2: § 213.22 Contributing Zone (Northern Part) for the Edwards Aquifer

(A) all areas within Kinney County, except the area within the watershed draining to Segment 2304 of the Rio Grande Basin;

(B) all areas within Uvalde, Medina, Bexar, and Comal Counties;

(C) all areas within Hays and Travis Counties, except the area within the watersheds draining to the Colorado River above a point 1.3 miles upstream from Tom Miller Dam, Lake Austin at the confluence of Barrow Brook Cove, Segment 1403 of the Colorado River Basin; and

(D) all areas within Williamson County, except the area within the watersheds draining to the Lampasas River above the dam at Stillhouse Hollow reservoir, Segment 1216 of the Brazos River Basin.

(3) **Contributing zone within the transition zone** - The area or watershed where runoff from precipitation flows downgradient to the recharge zone of the Edwards Aquifer. The contributing zone within the transition zone is depicted in detail on the official recharge and transition zones maps of the agency as provided for in §213.3 of this title (relating to Definitions). The contributing zone within the transition zone is located generally south and east of the recharge zone and includes specifically those areas where stratigraphic units not included in the Edwards Aquifer crop out at topographically higher elevations and drain to stream courses where stratigraphic units of the Edwards Aquifer crop out and are mapped as recharge zone.

(4) **Texas Pollutant Discharge Elimination System permits for storm water discharges from construction activities (TPDES permits)** - Texas Pollutant Discharge Elimination System general or individual permits issued by the agency for storm water discharges from construction activities in Texas.

(5) **Notice of intent (NOI)** - Notice of intent required by the Texas Pollutant Discharge Elimination System general permits for storm water discharges from construction activities.

(6) **Regulated activity** -

(A) Any construction or post-construction activity occurring on the contributing zone of the Edwards Aquifer that has the potential for contributing pollution to surface streams that enter the Edwards Aquifer recharge zone.

(i) These activities include construction or installation of:

(I) buildings;

(II) utility stations;

(III) utility lines;

(IV) underground and aboveground storage tank systems;
(V) roads;

(VI) highways; or

(VII) railroads.

(ii) Clearing, excavation, or other activities which alter or disturb the topographic or existing storm water runoff characteristics of a site are regulated activities.

(iii) Any other activities that pose a potential for contaminating storm water runoff are regulated activities.

(B) "Regulated activity" does not include:

(i) the clearing of vegetation without soil disturbance;

(ii) agricultural activities, except feedlots/concentrated animal feeding operations that are regulated under Chapter 321 of this title (relating to Control of Certain Activities by Rule);

(iii) activities associated with the exploration, development, and production of oil or gas or geothermal resources under the jurisdiction of the Railroad Commission of Texas;

(iv) routine maintenance of existing structures that does not involve site disturbance including, but not limited to:

(I) the resurfacing of existing paved roads, parking lots, sidewalks, or other development-related impervious surfaces; and

(II) the building of fences, or other similar activities that present little or no potential for contaminating hydrologically-connected surface water;

(v) routine maintenance that involves little or no change to the topographic or geologic features; or

(vi) construction of single-family residences on lots that are larger than five acres, where no more than one single-family residence is located on each lot.

(7) **Site** - The entire area within the legal boundaries of the property described in the application. Regulated activities on a site located partially on the recharge zone and the contributing zone must be treated as if the entire site is located on the recharge zone, subject to the requirements under Subchapter A of this chapter (relating to Edwards Aquifer in Medina, Bexar, Comal, Kinney, Uvalde, Hays, Travis, and Williamson Counties).

§213.23. Plan Processing and Approval.

(a) Approval by executive director.

(1) No person may begin the construction of any regulated activity until a contributing zone plan or modification to a plan as required by §213.21 of this title (relating to Applicability and Persons or Entity Required to Apply) has been:

(A) filed with the appropriate regional office, and

(B) the application has been reviewed and approval letter issued by the executive director.

(2) The appropriate regional office shall provide copies of applications to affected incorporated cities, groundwater conservation districts, and counties in which the proposed regulated activity will be located. These copies will be distributed within five days of the application being determined to be administratively complete. Any person may file comments within 30 days of the date the application is mailed to local governmental entities. The executive director shall review all comments that are timely filed.

(3) A complete application for approval of a contributing zone plan, as described in this section, must be submitted with a copy of the notice of intent and the appropriate fee as specified in §213.27 of this title (relating to Contributing Zone Plan Application and Exception Fees). The application may be submitted to the executive director for approval prior to the submittal of the notice of intent to the EPA.

(b) Contents of application. Applications for contributing zone plan approval filed under this subchapter must be made on forms provided by or approved by the executive director. Each application must, at a minimum, include the following:

(1) the name of the development, subdivision, or facility for which the application is submitted and the name, address, and telephone number of the owner or any other persons signing the application;

(2) a narrative description of the location of the project or facility for which the application is submitted, presenting sufficient detail and clarity so that the project site and its boundaries can be located during a field inspection;

(3) a technical report as described under §213.24 of this title must accompany the application for plan approval; and

(4) any additional information needed by the executive director for plan approval.

(c) Submission of application.

(1) Submit one original and one copy for the executive director's review and additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the proposed regulated activities will be located. The copies must be submitted to the appropriate regional office.

(2) Only the following may submit an application for review and approval by the executive director:

(A) owner(s);

(B) the owner(s)' authorized agent(s); or

(C) those persons having the right to possess and control the property which is the subject of the contributing zone plan.

(d) Signatories to applications. All applications must be signed as specified under §213.4(d)(1) of this title (relating to Required Signature). The executive director requires written proof of authorization for any person signing an application.

(e) Executive director review. The executive director must complete the review of an application within 90 days after determining that it is administratively complete. The executive director must declare that the application is administratively complete or deficient within 30 days of receipt by the appropriate regional office. Grounds for a deficient application include, but are not limited to, failure to include all information listed in this section and failure to pay all applicable application fees.

(f) Additional provisions. As a condition of contributing zone plan approval, the executive director may impose additional provisions necessary to protect the Edwards Aquifer from pollution. The executive director may conditionally approve a contributing zone plan or impose special conditions on the approval of a contributing zone plan. Upon inspection, the executive director may require the applicant to take additional measures if the activities do not conform to an approved plan or the plan did not address all potential sources of pollution as required by these rules.

(g) Term of approval. The executive director's approval of a contributing zone plan will expire two years after the date of initial issuance, unless prior to the expiration date, substantial construction related to the approved plan has commenced. For purposes of this subsection, substantial construction is where more than ten percent of total construction has commenced. If a written request for an extension is filed under the provisions of this subsection, the approved plan continues in effect until the executive director acts on the request for an extension.

(1) A written request for an extension must be received not earlier than 60 days prior to the expiration date of an approved contributing zone plan or a previously approved extension. Requests for extensions are subject to fees outlined in §213.28 of this title (relating to Fees Related to Requests For Contributing Zone Plan Approval Extension).

(2) An executive director's approved extension will expire six months after the original expiration date of the approved contributing zone plan or a previously approved extension unless prior to the expiration date, commencement of construction, repair, or replacement related to the approved plan has occurred.

(3) A plan approval will expire and no extension will be granted if less than 50 percent of the total construction has been completed within ten years from the initial approval of a plan. A new plan must be submitted to the appropriate regional office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.

(4) Any requests for extensions received by the executive director after the expiration date of an approved contributing zone plan or a previously approved extension will not be accepted. A new application for the purposes of this subchapter must be submitted to the appropriate regional office with the appropriate fees for the review and approval by the executive director.

(5) An extension will not be granted if the proposed regulated activity under an approved plan has changed.

(h) Legal transfer of property. Upon legal transfer of property, the new owner(s) is required to comply with all terms of the approved contributing zone plan. If the new owner intends to commence any new regulated activity on the site, a new application for plan approval for the new activity must be filed with and approved by the executive director beforehand.

(i) Modification of a previously approved plan. The holder of any approved contributing zone plan letter must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:

(1) any physical or operational modification of any best management practices or structure(s), including but not limited to temporary or permanent ponds, dams, berms, silt fences, and diversionary structures;

(2) any change in the nature or character of the regulated activity from that which was originally approved;

(3) a change that would significantly impact the ability to prevent pollution of the Edwards Aquifer and hydrologically connected surface water; or

(4) any development of land previously identified in a contributing zone plan as undeveloped.

(j) Compliance. The holder of the approved or conditionally approved contributing zone plan letter is responsible for compliance with this subchapter and the approved plan. The holder is also responsible for any special conditions of an approved plan through all phases of plan implementation. Failure to comply with any rule or condition of the executive director's approval is a violation of this rule and is subject to administrative orders and penalties as provided under §213.25 of this title (relating to Enforcement). Such violations may also be subject to civil penalties and injunction.

(k) Responsibility for maintenance of permanent best management practices (BMPs) and measures after construction is complete.

(1) The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

(2) A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the assumption of the obligation or the transfer of ownership.

(3) This section applies to:

(A) multiple single-family residential developments, multi-family residential, and

(B) non-residential developments such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

Adopted June 26, 2002 Effective July 19, 2002

§213.24. Technical Report.

For all regulated activities, a technical report must accompany the application for contributing zone plan approval. The report must address the following issues. The site description, controls, maintenance, and inspection requirements for the storm water pollution prevention plan (SWPPP) developed under the Texas Pollutant Discharge Elimination System (TPDES) general permits for storm water discharges may be submitted to fulfill paragraphs (1) - (5) of this section, providing the following requirements are met.

(1) The report must contain a location map and the site plan.

(A) The location map must be a legible road map with directions, including mileage, which would enable the executive director to locate the site for inspection.

(B) The site plan must be drawn at a minimum scale of one inch to 400 feet. The site plan must show:

(i) the 100-year floodplain boundaries (if applicable);

(ii) the layout of the development, and existing and finished contours at appropriate, but not greater than ten foot contour intervals; and

(iii) a drainage plan showing all paths of drainage from the site to surface streams;

(iv) the drainage patterns and approximate slopes anticipated after major grading activities;

(v) areas of soil disturbance and areas that will not be disturbed;

(vi) locations of major structural and nonstructural controls identified in the technical report;

(vii) locations where stabilization practices are expected to occur;

(viii) surface waters (including wetlands); and

(ix) locations where storm water discharges to a surface water.

(2) The report must describe the nature of the regulated activity (such as residential, commercial, industrial, or utility), including:

(A) the size of the site in acres;

(B) the projected population for the site;

(C) the amount and type of impervious cover expected after construction is complete, such as paved surface or roofing;

(D) the amount of surface area expected to be occupied by parking lots; and

(E) other factors that could affect the surface water quality.

(3) The report must describe the volume and character of storm water runoff expected to occur. Estimates of storm water runoff quality and quantity should be based on area and type of impervious cover, as described in paragraph (2)(C) of this section. An estimate of the runoff coefficient of the site for both the pre-construction and post-construction conditions should be included in the report.

(4) The report must describe any activities or processes that may be a potential source of contamination and must provide the following information:

(A) the intended sequence of major activities that disturb soils for major portions of the site (e.g., grubbing, excavation, grading, utilities, and infrastructure installation);

(B) estimates of the total area of the site that is expected to be disturbed by excavation, grading, or other activities;

(C) a site map indicating the following: approximate slopes anticipated after major grading activities; areas of soil disturbance; areas that will not be disturbed; locations of major structural and nonstructural controls identified in the technical report; locations where stabilization practices are expected to occur; surface waters (including wetlands); and locations where storm water discharges to a surface water;

(D) location and description of any discharge associated with industrial activity other than construction; and

(E) the name of the receiving water(s) at or near the site that will be disturbed or will receive discharges from disturbed areas of the project.

(5) The report must describe the temporary best management practices (BMPs) and measures that will be used during construction. The technical report must clearly describe for each major activity identified in paragraph (4) of this section appropriate control measures and the general timing (or sequence) during the construction process when the measures will be implemented. The SWPPP developed under the TPDES general permits for storm water discharges may be submitted to fulfill this part of the technical report providing the following requirements are met.

(A) BMPs and measures must prevent pollution of surface water or storm water that originates upgradient from the site and flows across the site.

(B) BMPs and measures must prevent pollution of surface water that originates on-site or flows off the site, including pollution caused by contaminated storm water runoff from the site.

(C) A plan for the inspection of the temporary BMPs and measures and for their timely inspection, maintenance, repair, and, if necessary, retrofit must be included in the report.

(D) BMPs and measures must meet the requirements contained in §213.5(b)(4)(D)(i) of this title (relating to Required Edwards Aquifer Protection Plans, Notification, and Exemptions).

(E) Temporary sediment pond or basin construction plans and design calculation for a proposed temporary BMP or measure must be prepared by or under the direct supervision of a Texas licensed professional engineer. All construction plans and design information must be signed, sealed, and dated by the Texas licensed professional engineer.

(F) The construction-phase erosion and sediment controls should be designed to retain sediment on site to the extent practicable.

(G) All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director or other information indicates a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

(H) If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impacts (e.g., fugitive sediment in street could be washed into surface streams or sensitive features by the next rain).

(I) Sediment must be removed from sediment traps or sedimentation ponds when design capacity has been reduced by 50%.

(J) Litter, construction debris, and construction chemicals exposed to storm water must be prevented from becoming a pollutant source for storm water discharges (e.g., screening outfalls, picked up daily).

(6) The report must describe the permanent BMPs and measures that will be used after construction.

(A) BMPs and measures must prevent pollution of surface water or storm water originating on-site or upgradient from the site and flows across the site.

(B) BMPs and measures must prevent pollution of surface water downgradient of the site, including pollution caused by contaminated storm water runoff from the site.

(C) BMPs and measures must meet the requirements contained in §213.5(b)(4)(D)(ii) of this title.

(i) Construction plans and design calculations for the proposed permanent BMPs and measures must be prepared by or under the direct supervision of a Texas licensed professional engineer. All construction plans and design information must be signed, sealed, and dated by the Texas licensed professional engineer.

(ii) The technical report must contain a plan for the inspection of the permanent BMPs and measures and for their timely inspection, maintenance, repair, and, if necessary, retrofit, if requirements contained in §213.5(b)(4)(D) of this title are not being met. This plan must be prepared by the engineer designing the permanent BMPs and measures and signed by the owner or responsible party.

(iii) Pilot-scale field testing (including water quality monitoring) may be required for permanent BMPs and measures that are not contained in technical guidance recognized by or prepared by the executive director.

(I) When pilot-scale field testing of an innovative technology (including water quality monitoring) is required, only one pilot site will be approved.

(II) No additional approvals will be granted until the pilot study is complete and the applicant demonstrates adequate protection of surface water that enters the recharge zone of the Edwards Aquifer.

(III) If the innovative technology demonstrates adequate protection, additional units may be approved for use as permanent BMPs and measures on the contributing zone.

(IV) If the innovative technology demonstrates inadequate protection of surface streams that enter the recharge zone of the Edwards Aquifer, a retrofit of the permanent BMP may be required to achieve compliance with §213.5(b)(4)(D) of this title and no additional units will be approved for use on the contributing zone.

(7) The technical report must describe the measures that will be taken to avoid or minimize surface stream contamination, or changes in the way that water enters a stream as a result of construction and development. The measures should address the following:

(A) increased stream flashing;

(B) the creation of stronger flows and instream velocities; and

(C) other instream effects caused by the regulated activity that increase erosion that results in water quality degradation.

(8) The technical report must describe the method of disposal of wastewater from the site.

(A) If wastewater is to be disposed of by conveyance to a sewage treatment plant for treatment and disposal, the existing or proposed treatment facility must be identified.

(B) If wastewater is to be disposed of by an on-site sewage facility, the application must be accompanied by a written statement from the appropriate authorized agent, stating that the site is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under Chapter 285 of this title (relating to On-Site Sewage Facilities), or identifying those areas that are not suitable.

(C) If wastewater is to be discharged in the contributing zone, requirements under §213.6(c) of this title (relating to Wastewater Treatment and Disposal Systems) must be satisfied.

(9) The technical report must describe the measures that will be used to contain any spill of static hydrocarbons or hazardous substances such as on a roadway or from a pipeline or temporary aboveground storage tank system of 250 gallons or more.

(A) Temporary storage facilities are those used on site for less than one year.

(B) Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from the five-year floodplain of any stream drainage.

(10) The technical report must indicate the placement of permanent aboveground storage tank facilities. Permanent aboveground storage tank facilities for static hydrocarbons and hazardous substances with cumulative storage capacity of 500 gallons or greater must be constructed, and spills removed using the standards contained in §213.5(e)(1) of this title.

(11) Exemption.

(A) Regulated activities exempt from the contributing zone plan application requirements under this section are:

(i) the installation of underground utilities, including:

(I) storm and sanitary sewage lines;

(II) natural gas lines;

(III) telephone lines;

(IV) electric lines; and

(V) water lines; and

(ii) the installation of underground tanks for the storage of static hydrocarbons and hazardous substances.

(B) An individual land owner who seeks to construct his/her own single-family residence or associated residential structures on the site is exempt from the contributing zone plan application requirements under this subchapter, provided that the land owner does not exceed 20% impervious cover on the site.

(C) Temporary erosion and sedimentation controls are required to be installed and maintained for exempted activities on the contributing zone. All temporary erosion and sedimentation controls must meet the requirements contained in paragraph (5) of this section, must be installed prior to construction, must be maintained during construction, and may be removed only when vegetation is established and the construction area is stabilized. This subparagraph does not apply to single-family residences on a site greater than five acres or on a site less than five acres and not a part of a common plan of development or sale with the potential to disturb cumulatively five or more acres.

(D) The executive director may monitor storm water discharges from these projects to evaluate the adequacy of the temporary erosion and sedimentation control measures. Additional protection will be required if the executive director determines that these controls are inadequate to protect water quality.

Adopted August 10, 2005 Effective September 1, 2005

§213.25. Enforcement.

Liability for penalties may result and may subject a noncompliant person to enforcement proceedings initiated by the executive director if there is failure to comply with:

(1) any provision of this subchapter,

(2) an approved or conditionally approved contributing zone plan or letter, or

(3) any applicable regulation or order of the commission issued pursuant to this chapter and in accordance with Chapter 26 and other relevant provisions of the Texas Water Code or Texas Health and Safety Code.

Adopted September 23, 1998 Effective June 1, 1999

§213.26. Exceptions.

(a) Granting of exceptions. Exceptions to any substantive provision of this subchapter related to the protection of water quality may be granted by the executive director if the requestor can demonstrate equivalent water quality protection for surface streams which enter the recharge zone of the Edwards Aquifer. Prior approval under this section must be obtained from the executive director for the exception to be authorized.

(b) Procedure for requesting an exception. A person requesting an exception to the provisions of this subchapter relating to the protection of water quality must file an original and one copy of a written request with the executive director at the appropriate regional office stating in detail:

(1) the name, address, and telephone numbers of the requestor;

(2) site and project name and location;

(3) the nature of the exception requested;

(4) the justification for granting the exception as described in subsection (a) of this section; and

(5) any other pertinent information that the executive director requests.

(c) Fees related to requests for exceptions. A person submitting an application for an exception, as described in this section, must pay $500 for each exception request. The fee is due and payable at the time the exception request is filed, and should be submitted as described in §213.27 of this title (relating to Application Fees). If the exception request fee is not submitted in the correct amount, the executive director is not required to consider the exception request until the correct fee is submitted.

Adopted April 2, 2008 Effective April 24, 2008

213.27. Application Fees.

(a) The person submitting an application for approval or modification of any contributing zone plan under this subchapter must pay an application fee in the amount set forth in subsection (b) of this section. The fee is due and payable at the time the application is filed. The fee must be sent to either the appropriate regional office or the cashier in the agency headquarters located in Austin, accompanied by an Edwards Aquifer Contributing Zone Fee Application Form, provided by the executive director. Application fees must be paid by check or money order, payable to the "Texas Commission on Environmental Quality." If the application fee is not submitted in the correct amount, the executive director is not required to consider the application until the correct fee is submitted.

(b) For contributing zone plans and modifications to those plans, the application should be based on the classification and the total acreage of the site where regulated activities will occur as specified in Table 2 of this subsection.

Figure 30 TAC §213.27(b)

Table 2

CLASSIFICATION/NUMBER OF ACRES	FEE
One single-family residential dwelling on less than 5 acres	$650
Multiple single-family residential dwellings and parks	
Less than 5 acres	$1,500
5 acres to less than 10 acres	$3,000
10 acres to less than 40 acres	$4,000
40 acres to less than 100 acres	$6,500
100 acres to less than 500 acres	$8,000
500 acres or more	$10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	
Less than 1 acre	$3,000
1 acre to less than 5 acres	$4,000
5 acres to less than 10 acres	$5,000
10 acres to less than 40 acres	$6,500
40 acres to less than 100 acres	$8,000
100 acres or more	$10,000

Adopted April 2, 2008 Effective April 24, 2008

§213.28. Fees Related to Requests for Extensions.

The person submitting an application for an extension of an approval of any contributing zone plan under this subchapter must pay $150 for each extension request. The fee is due and payable at the time the extension request is filed, and should be submitted as described in §213.27 of this title (relating to Application Fees). If the extension fee is not submitted in the correct amount, the executive director is not required to consider the extension request until the correct fee is submitted. The extension request must be submitted to the appropriate regional office and must include a copy of the contributing zone plan application and approval letter that is the subject of the extension request.

Adopted April 2, 2008 Effective April 24, 2008

SUBCHAPTER C: DISCHARGE OF PESTICIDES
§213.31
Effective March 31, 2011

§213.31. Discharge of Pesticides.

Discharges associated with pesticide applications authorized by the commission or exempted from permit requirements by federal or state statute are exempt from the prohibition of increased pollutant load found in Subchapters A and B of this chapter (relating to Edwards Aquifer).

Adopted March 9, 2011 Effective March 31, 2011

Agent Authorization Form

For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Stephen Ashlock,
Print Name

Vice President of Land Development,
Title - Owner/President/Other

of Pulte Homes of Texas LP,
Corporation/Partnership/Entity Name

have authorized Harrison M. Hudson, P.E.
Print Name of Agent/Engineer

of Kimley-Horn and Associates, Inc.
Print Name of Firm

to represent and act on the behalf of the above-named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

09/27/2020
Date

THE STATE OF Texas §

County of Williamson §

NORA M. COLE
Notary Public, State of Texas
Comm. Expires 06-04-2022
Notary ID 131591259

BEFORE ME, the undersigned authority, on this day personally appeared Stephen Ashlock known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 28th day of Sept, 2020.

NOTARY PUBLIC

Nora M Cole
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 06.04.2022

Application Fee Form

Texas Commission on Environmental Quality

Name of Proposed Regulated Entity: Reserve at North Fork

Regulated Entity Location: 9401 AmberglenBlvd., Bldg I, Suite 150

Name of Customer: Pulte Homes of Texas, LP

Contact Person: Stephen Ashlock

Phone: 512-532-3355 Customer Reference Number (if issued): CN _____

Regulated Entity Reference Number (if issued): _____

Austin Regional Office (3373)

☐ Hays ☐ Travis ☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde

☐ Comal ☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment**. This payment is being submitted to:

☒ Austin Regional Office

☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ San Antonio Regional Office

☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☐ Recharge Zone ☒ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	30.434 Acres	$4,000
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____ Date: 09/27/2020

Application Fee Schedule

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

Project	*Project Area in Acres*	*Fee*
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

Core Data Form

TCEQ Core Data Form

TCEQ Use Only

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal (*Core Data Form should be submitted with the renewal form*) ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN		RN

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy)

☒ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name (*If an individual, print last name first: eg: Doe, John*) *If new Customer, enter previous Customer below:*

Pulte Homes of Texas, LP

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☒ Other: Limited Partnership

12. Number of Employees
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:

9401 Amberglen Blvd., Bldg I, Suite 150

City	Austin	State	TX	ZIP	78729	ZIP + 4	

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	stephen.ashlock@pultegroup.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(512) 532-3355		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (*If 'New Regulated Entity" is selected below this form should be accompanied by a permit application*)

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name (*Enter name of the site where the regulated action is taking place.*)

Reserve at North Fork

23. Street Address of the Regulated Entity: *(No PO Boxes)*	401 Heritage Grove Rd							
	City	Leander	**State**	TX	**ZIP**	78641	**ZIP + 4**	
24. County	Williamson							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	Located in Leander roughly 2000' west of US 183 south of Heritage Grove Rd.				
26. Nearest City			**State**	**Nearest ZIP Code**	
Leander			Tx	78641	
27. Latitude (N) In Decimal:	30.59694°N	**28. Longitude (W) In Decimal:**	97.86889°W		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
1531	1521	236117	236115

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Single Family Housing

34. Mailing Address:	**9401 Amberglen Blvd., Bldg I, Suite 150**							
	City	**Austin**	**State**	**TX**	**ZIP**	**78729**	**ZIP + 4**	

35. E-Mail Address:	**stephen.ashlock@pultegroup.com**

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(512) 532-3355		**( ) -**

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:		**41. Title:**	

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
( ) -		**( ) -**	

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Kimley-Horn	**Job Title:**	Project Manager
Name *(In Print):*	Harrison Hudson, P.E.	**Phone:**	**(** 737 **)** 202- **3202**
Signature:		**Date:**	

REVISIONS		
REVISION #	DESCRIPTION	APPROVAL

PUBLIC IMPROVEMENTS CONSTRUCTION PLANS FOR

RESERVE AT NORTH FORK

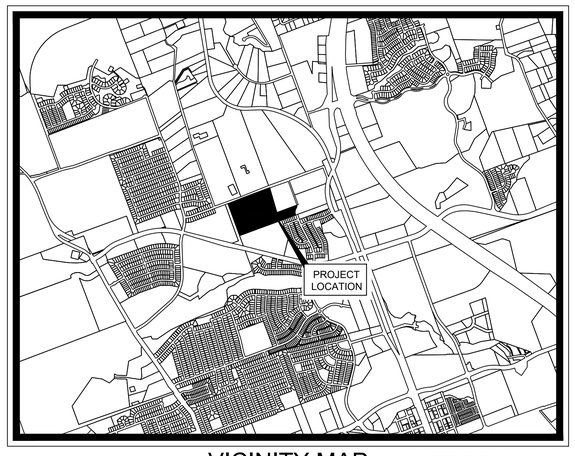
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

LEGAL DESCRIPTION
AW0134 - COCHRAN, C.SUR.,
ACRE 40.692

WATERSHED STATUS
THIS SIGHT IS LOCATED IN THE NORTHFORK-BRUSHY CREEK WATERSHED OF THE BRAZOS BASIN

FLOODPLAIN INFORMATION
NO LOTS WITHIN THIS SUBDIVISION ARE ENCROACHED BY A SPECIAL FLOOD HAZARD AREA INDICATED BY THE 100 YEAR FLOOD AS IDENTIFIED BY THE U.S. FEDERAL EMERGENCY MANAGEMENT AGENCY BOUNDARY MAP #48491C0455E FOR WILLIAMSON COUNTY, EFFECTIVE DATE SETPEMBER 26, 2008

RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY AND ADEQUACY OF HIS/HER SUBMITTAL, WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY CITY ENGINEERS.



VICINITY MAP
SCALE: 1" = 2,000'

MAPSCO GRID: #312J 312K 312N 312P
DRAINAGE BASIN: TURKY CREEK-BRUSHY CREEK WATERSHED

SHEET INDEX

ELECTRIC SERVICE

PEDERNALES ELECTRIC COOPERATIVE
201 S. AVENUE F
JOHNSON CITY, TX 78636
TEL: 800-868-4791 EXT: 7025
CONTACT: RHONDA REEL

GAS SERVICE

ATMOS ENERGY CORPORATION
3110 N. IH 35
AUSTIN, TX 78681
TEL: 512-310-3855
CONTACT: MICHAEL ANDREWS

OWNER/DEVELOPER

LOWER FORTY LLC
5100 W HIGHWAY 260, BLDG 2, STE 200
AUSTIN, TX 78735
TEL: 512-617-4648
CONTACT: JERRY REED

ENGINEER

Kimley»Horn

10814 JOLLYVILLE ROAD, AVALLON IV, SUITE 300
AUSTIN, TEXAS 78759
Tel. No. (512) 418-1771
Fax No. (512) 418-1791
CERTIFICATE OF REGISTRATION #928
CONTACT: BEN GREEN, P.E.

SURVEYOR

KIMLEY-HORN
610 NW LOOP 410, SUITE 350
SAN ANTONIO, TX 78216
TEL: 210-541-9166
CONTACT: JOHN GREGORY MOISER

WATER SERVICE

CITY OF LEANDER
105 N. BRUSHY ST.
LEANDER, TX 78641
TEL: (512) 259-1142
CONTACT:

WASTEWATER SERVICE

CITY OF LEANDER
105 N. BRUSHY ST.
LEANDER, TX 78641
TEL: (512) 259-1142
CONTACT:

September 2020

FOR DIRECTOR, PLANNING AND DEVELOPMENT REVIEW DEPARTMENT — DATE

LEANDER WATER UTILITY — DATE

LEANDER FIRE DEPARTMENT — DATE

REVISIONS/CORRECTIONS							
NO.	DESCRIPTION	REVISE (R) VOID (V) ADD (A) SHEET NO.'S	TOTAL NO. SHEETS IN PLAN SET	NET CHANGE IMP. COVER (SQ. FT.)	TOTAL SITE IMP. COVER (SQ. FT.)/%	CITY OF AUSTIN APPROVAL DATE	DATE IMAGED

BENCHMARKS

BM #101, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT
- ELEV.=1002.370' (NAVD '88)

BM #102, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 40.57 ACRE TRACT BELONGING TO UPPER FORTY, LLC
- ELEV.=995.150' (NAVD '88)

811 Know what's below. Call before you dig.

No.	REVISIONS	DATE	BY

PULTE LEANDER SOUTH - PHASE 1

Kimley»Horn
© 2017 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, AVALLON IV, SUITE 300, AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED PROFESSIONAL ENGINEER
09-29-2020

KHA PROJECT 069312667			
DATE SEPTEMBER 2020	SCALE: AS SHOWN	DESIGNED BY: BG	
		DRAWN BY: ORB	
		CHECKED BY: BG	

COVER SHEET

RESERVE AT NORTH FORK
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
1 OF 48

KHA PROJECT NO. 069312667

CIVIL CONSTRUCTION PLANS

GENERAL NOTES
REVISED JUNE 19, 2018

ANY CHANGES TO THESE NOTES SHOULD BE CLOUDED ON THE PLAN SET.

CITY CONTACTS:
ENGINEERING MAIN LINE: 512-528-2766
PLANNING DEPARTMENT: 512-528-2750
PUBLIC WORKS MAIN LINE: 512-259-2640
STORMWATER INSPECTIONS: 512-285-0055
UTILITIES MAIN LINE: 512-259-1142
UTILITIES ON-CALL: 512-690-4760

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. ANY DISCREPANCIES WITH CONSTRUCTION PLANS FOUND IN THE FIELD SHALL BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER.
2. THE CONTRACTOR SHALL CONTACT THE TEXAS EXCAVATION SYSTEM AT 1-800-344-8377 FOR EXISTING UTILITY LOCATIONS 48 HOURS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES THAT ARE TO BE EXTENDED, TIED TO, CROSSED, OR ALTERED; OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS.
3. CONTACT THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT FOR EXISTING WATER AND WASTEWATER LOCATIONS 48 HOURS PRIOR TO CONSTRUCTION.
4. ANY CHANGES OR REVISIONS TO THESE PLANS MUST FIRST BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER FOR REVIEW AND WRITTEN APPROVAL PRIOR TO CONSTRUCTION OF THE REVISION.
5. A TRAFFIC CONTROL PLAN, IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, SHALL BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO ANY PARTIAL OR COMPLETE ROADWAY CLOSURES. TRAFFIC CONTROL PLANS SHALL BE SITE SPECIFIC AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. LANE CLOSURES ON ARTERIALS AND ANY FULL ROAD CLOSURES REQUIRE MESSAGE BOARDS NOTIFYING THE PUBLIC ONE WEEK PRIOR TO THE CLOSURE.
6. NO WORK IS TO BE PERFORMED BETWEEN THE HOURS OF 6:00 P.M. AND 7:00 A.M. THE CITY INSPECTOR RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO UNCOVER ALL WORK PERFORMED WITHOUT INSPECTION. FURTHER, THERE IS A NOISE ORDINANCE IN EFFECT FOR CONSTRUCTION ACTIVITY BETWEEN THE HOURS OF 9 PM AND 7 AM. REQUESTS FOR EXCEPTIONS TO THE ORDINANCE MUST BE MADE TO LEANDER CITY COUNCIL.
7. CONTACT THE CITY INSPECTOR 4 DAYS PRIOR TO WORK TO SCHEDULE ANY INSPECTIONS ON WEEKENDS OR CITY HOLIDAYS.
8. NO STREET LIGHTS OR SIGNS OF ANY KIND ARE TO BE PLACED WITHIN ANY SIDEWALKS.
9. NO BLASTING IS ALLOWED.
10. ANY EXISTING UTILITIES, PAVEMENT, CURBS, SIDEWALKS, STRUCTURES, TREES, ETC., THAT ARE DAMAGED OR REMOVED SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.
11. THE CONTRACTOR SHALL GIVE THE CITY OF LEANDER 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION. CONTACT ASSIGNED CITY INSPECTOR.
12. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND THE CITY OF LEANDER REPRESENTATIVES PRIOR TO INSTALLATION OF EROSION/SEDIMENTATION CONTROLS AND TREE PROTECTION MEASURES AND PRIOR TO BEGINNING ANY WORK. THE CONTRACTOR SHALL NOTIFY THE CITY OF LEANDER PLANNING DEPARTMENT PLANNING COORDINATOR AT LEAST THREE (3) DAYS PRIOR TO THE MEETING DATE.
13. THE CONTRACTOR AND ENGINEER SHALL KEEP ACCURATE RECORDS OF ALL CONSTRUCTION THAT DEVIATES FROM THE PLANS. THE ENGINEER SHALL FURNISH THE CITY OF LEANDER ACCURATE "RECORD DRAWINGS" FOLLOWING THE COMPLETION OF ALL CONSTRUCTION. THESE "RECORD DRAWINGS" SHALL MEET THE SATISFACTION OF THE ENGINEERING DEPARTMENTS PRIOR TO FINAL ACCEPTANCE
14. WHEN CONSTRUCTION IS BEING CARRIED OUT WITHIN EASEMENTS, THE CONTRACTOR SHALL CONFINE HIS WORK TO WITHIN THE NORMAL AND TEMPORARY EASEMENTS. PRIOR TO ACCEPTANCE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL TRASH AND DEBRIS WITHIN THE PERMANENT EASEMENTS. CLEANUP SHALL BE TO THE SATISFACTION OF THE ENGINEER.
15. CONTRACTOR TO LOCATE, PROTECT, AND MAINTAIN BENCHMARKS, MONUMENTS, CONTROL POINTS AND PROJECT ENGINEERING REFERENCE POINTS. RE-ESTABLISH DISTURBED OR DESTROYED ITEMS BY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, AT NO ADDITIONAL COST TO OWNER.
16. THE CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. IN THE EVENT THAT A FENCE MUST BE REMOVED, THE CONTRACTOR SHALL REPLACE SAID FENCE OR PORTION THEREOF WITH THE SAME TYPE OF FENCING TO A QUALITY OF EQUAL OR BETTER THAN THE ORIGINAL FENCE.
17. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST CITY OF AUSTIN STANDARD SPECIFICATIONS. CITY OF AUSTIN STANDARDS SHALL BE USED UNLESS OTHERWISE NOTED IN DETAILS.
18. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). OSHA STANDARDS MAY BE PURCHASED FROM THE GOVERNMENT PRINTING OFFICE; INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA, 1033 LA POSADA DR. SUITE 375, AUSTIN, TEXAS 78752-3832.
19. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT WHERE NOT SPECIFICALLY COVERED IN THE PROJECT SPECIFICATIONS SHALL CONFORM TO ALL CITY OF LEANDER DETAILS AND CITY OF AUSTIN STANDARD SPECIFICATIONS.
20. PROJECT SPECIFICATIONS TAKE PRECEDENCE OVER PLANS AND SPECIAL CONDITIONS GOVERN OVER TECHNICAL SPECIFICATIONS.
21. HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE MINIMUM THICKNESS OF 2 INCHES WITH NO RECYCLED ASPHALT SHINGLES CONTENT.
22. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY RISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR THE CONSTRUCTION OF THIS PROJECT.
23. CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION BETWEEN HIMSELF AND OTHER CONTRACTORS AND UTILITIES IN THE VICINITY OF THE PROJECT. THIS INCLUDES GAS, WATER, WASTEWATER, ELECTRICAL, TELEPHONE, CABLE TV AND STREET DRAINAGE WORK. ONCE THE CONTRACTOR BECOMES AWARE OF A POSSIBLE CONFLICT, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER WITHIN TWENTY-FOUR (24) HOURS.
25. THE CONTRACTOR MUST OBTAIN A CONSTRUCTION WATER METER FOR ALL WATER USED DURING CONSTRUCTION. A COPY OF THIS PERMIT MUST BE CARRIED AT ALL TIMES BY ALL WHO USE WATER.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADS AND DRIVES ADJACENT TO AND NEAR THE SITE FREE FROM SOIL, SEDIMENT AND DEBRIS. CONTRACTOR WILL NOT REMOVE SOIL, SEDIMENT OR DEBRIS FROM ANY AREA OR VEHICLE BY MEANS OF WATER. ONLY SHOVELING AND SWEEPING WILL BE ALLOWED. CONTRACTOR WILL BE RESPONSIBLE FOR DUST CONTROL FROM THE SITE.
27. THE CITY OF LEANDER SHALL NOT BE PETITIONED FOR ACCEPTANCE UNTIL ALL NECESSARY EASEMENT DOCUMENTS HAVE BEEN SIGNED AND RECORDED.
28. AN ENGINEER'S CONCURRENCE LETTER AND RECORD DRAWINGS SHALL BE SUBMITTED TO THE ENGINEERING DEPARTMENT PRIOR TO THE ISSUANCE OF CERTIFICATE OF COMPLETION OR SUBDIVISION ACCEPTANCE. THE ENGINEER AND CONTRACTOR SHALL VERIFY THAT ALL FINAL REVISIONS AND CHANGES HAVE BEEN MADE TO THE DIGITAL COPY PRIOR TO CITY SUBMITTAL. RECORD CONSTRUCTION DRAWINGS, INCLUDING ROADWAY AND ALL UTILITIES SHALL BE PROVIDED TO THE CITY IN DIGITAL FORMAT AS AUTOCAD ".DWG" FILES, MICROSTATION ".DGN" FILES OR ESRI ".SHP" FILES ON CD ROM. LINE WEIGHTS, LINE TYPES AND TEXT SIZE SHALL BE SUCH THAT IF HALF-SIZE PRINTS (11"X17") WERE PRODUCED, THE PLANS WOULD STILL BE LEGIBLE. ALL REQUIRED DIGITAL FILES SHALL CONTAIN A MINIMUM OF TWO CONTROL POINTS REFERENCED TO THE STATE PLANE GRID COORDINATE SYSTEM - TEXAS CENTRAL ZONE (4203), IN US SURVEY FEET AND SHALL INCLUDE ROTATION INFORMATION AND SCALE FACTOR REQUIRED TO REDUCE SURFACE COORDINATES TO GRID COORDINATES IN US SURVEY FEET
29. TREES IN EXISTING ROW SHOULD BE PROTECTED OR NOTED IN THE PLANS TO BE REMOVED.

CONSTRUCTION SEQUENCE NOTES

1. INSTALL TEMPORARY EROSION CONTROL MEASURES ACCORDING TO THE PLANS AND SPECIFICATIONS PRIOR TO ANY CLEARING, GRADING, EXCAVATING, ETC.
2. HOLD PRE-CONSTRUCTION MEETING CONFERENCE WITH CONTRACTOR, THE CITY OF LEANDER, AND DESIGN ENGINEER.
3. BEGIN CONSTRUCTION OF PROJECT AS FOLLOWS: DEMOLITION, PLACE MATERIALS, EXCAVATE, INSTALL UTILITIES, INSTALL STORM SEWER, INSPECT AND KEEP RECORDS ON TEMPORARY EROSION CONTROLS ON A REGULAR BASIS PER SWPP AND ADJUST THE CONTROLS AND/OR REMOVE ANY SEDIMENT BUILD UP. ENSURE THAT ALL OTHER PROVIDER'S (ATT, ATMOS, ONCOR, ETC) UNDERGROUND UTILITY CROSSING ARE COMPLETED, INSTALL STREET IMPROVEMENTS.
4. INSTALL ALL PAVEMENT MARKINGS ACCORDING TO PLANS.
5. CLEAN UP SITE AND REVEGETATE ALL GRADED AND DISTURBED AREAS.
6. FINAL WALK THROUGH AND ACCEPTANCE OF WORK.
7. REMOVE TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES.
8. COMPLETE ANY NECESSARY FINAL DRESS UP OF ANY AREAS DISTURBED.
9. PROVIDE AS-BUILT MARK-UP DRAWINGS TO THE ENGINEER.

EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE PROTECTIVE FENCING PRIOR TO ANY WORK (CLEARING, GRUBBING OR EXCAVATION). CONTACT STORMWATER INSPECTOR FOR ON SITE INSPECTION PRIOR TO BEGINNING CONSTRUCTION.
2. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO ENSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.
3. THE TEMPORARY SPOILS DISPOSAL SITE IS TO BE SHOWN IN THE EROSION CONTROL MAP.
4. ANY ON-SITE SPOILS DISPOSAL SHALL BE REMOVED PRIOR TO ACCEPTANCE UNLESS SPECIFICALLY SHOWN ON THE PLANS. THE DEPTH OF SPOIL SHALL NOT EXCEED 10 FEET IN ANY AREA.
5. ALL AREAS DISTURBED OR EXPOSED DURING CONSTRUCTION SHALL BE RESTORED WITH A MINIMUM OF 6 INCHES OF TOPSOIL AND COMPOST BLEND. TOPSOIL ON SINGLE FAMILY LOTS MAY BE INSTALLED WITH HOME CONSTRUCTION. THE TOPSOIL AND COMPOST BLEND SHALL CONSIST OF 75% TOPSOIL AND 25% COMPOST.
6. SEEDING FOR REESTABLISHING VEGETATION SHALL COMPLY WITH THE AUSTIN GROW GREEN GUIDE OR WILLIAMSON COUNTY'S PROTOCOL FOR SUSTAINABLE ROADSIDES (SPEC 164--WC001 SEEDING FOR EROSION CONTROL). RESEEDING VARIETIES OF BERMUDA SHALL NOT BE USED.
7. STABILIZED CONSTRUCTION ENTRANCE IS REQUIRED AT ALL POINTS WHERE CONSTRUCTION TRAFFIC IS EXITING THE PROJECT ONTO EXISTING PAVEMENT. LINEAR CONSTRUCTION PROJECTS MAY REQUIRE SPECIAL CONSIDERATION. ROADWAYS SHALL REMAIN CLEAR OF SILT AND MUD.
8. TEMPORARY STOP SIGNS SHOULD BE INSTALLED AT ALL CONSTRUCTION ENTRANCES WHERE A STOP CONDITION DOES NOT ALREADY EXIST.
9. IN THE EVENT OF INCLEMENT WEATHER THAT MAY RESULT IN A FLOODING SITUATION, THE CONTRACTOR SHALL REMOVE INLET PROTECTION MEASURES UNTIL SUCH TIME AS THE WEATHER EVENT HAS PASSED.

WATER AND WASTEWATER NOTES

1. PRESSURE TAPS SHALL BE IN ACCORDANCE WITH CITY OF LEANDER STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL PERFORM ALL EXCAVATION, ETC. AND SHALL FURNISH, INSTALL AND AIR TEST THE SLEEVE AND VALVE. A CITY OF LEANDER INSPECTOR MUST BE PRESENT WHEN THE CONTRACTOR MAKES A TAP, AND/OR ASSOCIATED TESTS. A MINIMUM OF TWO (2) WORKING DAYS NOTICE IS REQUIRED. "SIZE ON SIZE" TAPS WILL NOT BE PERMITTED UNLESS MADE BY THE USE OF AN APPROVED FULL-CIRCLE GASKETED TAPPING SLEEVE. CONCRETE BLOCKING SHALL BE PLACED BEHIND AND UNDER ALL TAP SLEEVES A MINIMUM OF 24 HOURS PRIOR TO THE BRANCH BEING PLACED INTO SERVICE. BLOCKING SHALL BE INSPECTED PRIOR TO BACKFILL.
2. FIRE HYDRANTS ON MAINS UNDER CONSTRUCTION SHALL BE SECURELY WRAPPED WITH A BLACK POLY WRAP BAG AND TAPED INTO PLACE. THE POLY WRAP SHALL BE REMOVED WHEN THE MAINS ARE ACCEPTED AND PLACED INTO SERVICE.
3. CURVILINEAR WASTEWATER DESIGN LAYOUT IS NOT PERMITTED.
4. THRUST BLOCKING OR RESTRAINTS SHALL BE IN ACCORDANCE WITH THE CITY OF LEANDER STANDARD SPECIFICATIONS AND REQUIRED AT ALL FITTINGS PER DETAIL OR MANUFACTURER'S RECOMMENDATION. ALL FITTINGS SHALL HAVE BOTH THRUST BLOCKING AND RESTRAINTS.
5. MANDREL TESTING WILL BE REQUIRED ON ALL WASTEWATER PIPE. PER TCEQ, THIS TEST MUST BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.
6. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL SANITATION FOUNDATION (ANSI/NSF) STANDARD 61 AND MUST BE CERTIFIED BY AND ORGANIZATION ACCREDITED BY ANSI
7. TRENCH BACKFILL MUST BE COMPACTED BY FLOODING THE TRENCHES.
8. ALL WATER SERVICE, WASTEWATER SERVICE AND VALVE LOCATIONS SHALL BE APPROPRIATELY STAMPED AS FOLLOWS:

WATER SERVICE "W" ON TOP OF CURB
WASTEWATER SERVICE "S" ON TOP OF CURB
VALVE "V" ON TOP OF CURB

9. TOOLS FOR STAMPING THE CURBS SHALL BE PROVIDED BY THE CONTRACTOR. OTHER APPROPRIATE MEANS OF STAMPING SERVICE AND VALVE LOCATIONS SHALL BE PROVIDED IN AREAS WITHOUT CURBS. SUCH MEANS OF STAMPING SHALL BE SPECIFIED BY THE ENGINEER AND ACCEPTED BY THE CITY OF LEANDER
10. ALL PLASTIC PIPES FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 200 PSI.
11. NO PIPE OR FITTING WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY.
12. TYPICAL DEPTH OF COVER FOR ALL WASTEWATER LINES SHALL BE 48" MINIMUM, WATER LINES SHALL BE 36" MINIMUM UNDER BOTH PAVEMENT AND NATURAL GROUND. STORM SEWER SHALL BE 24" MINIMUM UNDER NATURAL GROUND
13. THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY AWWA FORMULAS.
14. ALL WATER MAINS, DISTRIBUTION LINES AND SERVICE LINES SHALL BE INSTALLED IN ENCASEMENT PIPE UNDERNEATH EXISTING STREETS AND OTHER PAVED SURFACES UNLESS APPROVED WITH PLANS.
15. ALL MECHANICAL RESTRAINTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
16. ALL DEAD-END WATER MAINS SHALL HAVE THRUST RESTRAINTS INSTALLED ON THE LAST THREE PIPE-LENGTHS (STANDARD 20' LAYING LENGTH), AT MINIMUM, AND THRUST BLOCKS INSTALLED ON THE PLUG. ADDITIONAL THRUST RESTRAINTS MAY BE REQUIRED BASED UPON THE MANUFACTURER'S RECOMMENDATIONS AND/OR CALCULATIONS BY THE ENGINEER OF RECORD.
17. WHERE WATER LINES CROSS WASTEWATER LINES AND THERE IS LESS THAN 9 FEET CLEARANCE BETWEEN LINES, THE WASTEWATER LINE SHALL BE PLACED SO THAT THE WASTEWATER PIPE SECTION IS CENTERED ON THE WATER LINE AND CONSTRUCTED IN ACCORDANCE WITH TCEQ CHAPTERS 217.53(B) AND 290.44(E).
18. PIPE MATERIAL FOR WATER MAINS SHALL BE PVC (AWWA C900-16 MIN. 235 PSI PRESSURE RATING). WATER SERVICES (2" OR LESS) SHALL BE POLYETHYLENE TUBING (BLACK, 200PSI, SDR-(9)). DUCTILE IRON PIPE (AWWA C115/C151, MIN. PRESSURE CLASS 250) MAY BE USED FOR WATER MAINS WITH THE EXPRESS APPROVAL OF CITY OF LEANDER ENGINEERING.
19. PIPE FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C900-16), GREEN AND MARKED FOR SEWER. PIPE MATERIAL FOR GRAVITY WASTEWATER MAINS SHALL BE PVC (ASTM D2241, D3034 MAX. SDR-26 OR PS115 F679) OR FIBERGLASS WITH PIPE STIFFNESS OF 72 PSI PER COA SPL WW-509.
20. ALL FIRE HYDRANT LEADS SHALL BE DUCTILE IRON PIPE (AWWA C115/C151 PRESSURE CLASS 350).
21. INTERIOR SURFACES OF ALL DUCTILE IRON POTABLE OR RECLAIMED WATER PIPE SHALL BE CEMENT-MORTAR LINED AND SEAL COATED AS REQUIRED BY AWWA C104.
22. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH MINIMUM 8-MIL POLYETHYLENE.
23. THE CONTRACTOR SHALL CONTACT THE ENGINEERING DEPARTMENT INSPECTOR AT 528-2700 AT LEAST 48 HOURS PRIOR TO CONNECTING TO THE EXISTING WATER LINES.
24. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON RING AND COVER. TAPPING OF FIBERGLASS MANHOLES SHALL NOT BE ALLOWED.
25. EXISTING MANHOLES MODIFIED BY CONSTRUCTION ACTIVITY SHALL BE TESTED FOR LEAKAGE BY VACUUM. ANY EXISTING MANHOLE WHICH FAILS TO PASS THE VACUUM TEST SHALL BE CLOSELY EXAMINED BY THE INSPECTOR AND THE CONTRACTOR TO DETERMINE IF THE MANHOLE CAN BE REPAIRED. THEREAFTER, THE CONTRACTOR SHALL EITHER REPAIR OR REMOVE AND REPLACE THE MANHOLE AS DIRECTED.
26. PIPE CONNECTIONS TO EXISTING MANHOLES AND JUNCTION BOXES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF AUSTIN SPECIFICATION 506.5.F.
27. LINE FLUSHING OR ANY ACTIVITY USING A LARGE QUANTITY OF WATER MUST BE COORDINATED WITH THE PUBLIC WORKS DEPARTMENT.
28. THE CONTRACTOR, AT HIS EXPENSE, SHALL PERFORM STERILIZATION OF ALL CONSTRUCTED POTABLE WATER LINES AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING TEST GAUGES), SUPPLIES (INCLUDING CONCENTRATED CHLORINE DISINFECTING MATERIAL), AND NECESSARY LABOR REQUIRED FOR THE STERILIZATION PROCEDURE. THE STERILIZATION PROCEDURE SHALL BE MONITORED BY CITY OF LEANDER PERSONNEL. WATER SAMPLES WILL BE COLLECTED BY THE CITY OF LEANDER TO VERIFY EACH TREATED LINE HAS ATTAINED AN INITIAL CHLORINE CONCENTRATION OF 50 PPM. WHERE MEANS OF FLUSHING IS NECESSARY, THE CONTRACTOR, AT HIS EXPENSE, SHALL PROVIDE FLUSHING DEVICES AND REMOVE SAID DEVICES PRIOR TO FINAL ACCEPTANCE BY THE CITY OF LEANDER.
29. SAMPLING TAPS SHALL BE BROUGHT UP TO 3 FEET ABOVE GRADE AND SHALL BE EASILY ACCESSIBLE FOR CITY PERSONNEL AT THE CONTRACTORS' REQUEST, AND IN HIS PRESENCE, SAMPLES FOR BACTERIOLOGICAL TESTING WILL BE COLLECTED BY THE CITY OF LEANDER NOT LESS THAN 24 HOURS AFTER THE TREATED LINE HAS BEEN FLUSHED OF THE CONCENTRATED CHLORINE SOLUTION AND CHARGED WITH WATER APPROVED BY THE CITY.
30. TESTING SHALL BE PERFORMED FOR ALL WASTEWATER PIPE INSTALLED AND PRESSURE PIPE HYDROSTATIC TESTING OF ALL WATER LINES CONSTRUCTED. THE OWNER'S CONTRACTOR SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GAUGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS. THE CONTRACTOR SHALL NOTIFY THE CITY OF LEANDER ENGINEERING DEPARTMENT NO LESS THAN 48 HOURS PRIOR TO PERFORMING STERILIZATION, QUALITY TESTS, OR PRESSURE TESTS. A CITY OF LEANDER INSPECTOR SHALL BE PRESENT FOR ALL TESTS AND SHALL BE PAID FOR BY THE OWNER/CONTRACTOR. THESE SERVICES ARE PAID FOR AT THE TIME OF CONSTRUCTION PLAN SUBMITTAL. THE HYDROSTATIC LEAKAGE RATE FOR POLYVINYL CHLORIDE (PVC) PIPE APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICA WATER WORKS ASSOCIATION C605 AS REQUIRED IN 30 TAC§290.44(A)(5).

$$Q = \frac{(LD\sqrt{P})}{148{,}000}$$

WHERE:

* Q= TEH QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR,
* L = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET,
* D= THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND
* P= THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).

31. THE CONTRACTOR SHALL NOT OPEN OR CLOSE ANY VALVE UNLESS AUTHORIZED BY THE CITY OF LEANDER.
32. ALL VALVE BOXES AND COVERS SHALL BE CAST IRON.
33. ALL WATER VALVE COVERS ARE TO BE PAINTED BLUE.
34. ALL WATER METER BOXES SHALL BE:
a. SINGLE, 1" METER AND BELOW DFW37F-12-1CA, OR EQUAL
b. DUAL, 1" METERS AND BELOW DFW39F-12-1CA, OR EQUAL
c. 1.5" SINGLE METER DFW65C-14-1CA, OR EQUAL
d. 2" SINGLE METER DFW1730F-12-1CA, OR EQUAL
35. SAND, AS DESCRIBED IN AUSTIN SPECIFICATION ITEM 510 PIPE, SHALL NOT BE USED AS BEDDING FOR WATER AND WASTEWATER LINES. ACCEPTABLE BEDDING MATERIALS ARE PIPE BEDDING STONE, PEA GRAVEL AND IN LIEU OF SAND, A NATURALLY OCCURRING OR MANUFACTURED STONE MATERIAL CONFORMING TO ASTM C33 FOR STONE QUALITY AND MEETING THE FOLLOWING GRADATION SPECIFICATION:

SIEVE SIZE	PERCENT RETAINED BY WEIGHT
1/2"	0
3/8"	0-2
#4	40-85
#10	95-100

36. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTING TO, SHUTTING DOWN, OR TERMINATING EXISTING UTILITY LINES MAY HAVE TO OCCUR AT OFF-PEAK HOURS. SUCH HOURS ARE USUALLY OUTSIDE NORMAL WORKING HOURS AND POSSIBLY BETWEEN 12 AM AND 6 AM.
37. ALL WASTEWATER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) REGULATIONS, 30 TAC CHAPTER 213 AND 30 TAC CHAPTER 217, AS APPLICABLE. WHENEVER TCEQ AND CITY OF LEANDER SPECIFICATION CONFLICT, THE MORE STRINGENT SHALL APPLY.
38. MANHOLES SHALL BE COATED PER CITY OF AUSTIN SPL WW-511 (RAVEN 405 OR SPRAYWALL).
39. DENSITY TESTING FOR TRENCH BACKFILL LOCATED WITHIN THE LIMITS OF THE PAVED AREA IS TO BE DONE IN 12" LIFTS EVERY 500' AND AT LEAST ONCE PER LINE SEGMENT
40. ALL GRAVITY WASTEWATER MAINS TO BE TESTED BY CAMERA AND PAID FOR BY THE CONTRACTOR. CAMERA TESTING FOR WASTEWATER LINES IN ROADWAY SHALL OCCUR BEFORE PAVING. CONTRACTOR SHALL PROVIDE THE CITY WITH A DVD COPY OF THE FULL CAMERA INSPECTION.
41. RECLAIMED AND RECYCLED WATER LINE SHALL BE CONSTRUCTED OF "PURPLE PIPE." ALL RECLAIMED AND RECYCLED WATER VALVE COVERS SHALL BE SQUARE AND PAINTED PURPLE.
42. THE USE OF PIPES AND PIPE FITTINGS THAT CONTAIN MORE THAN 0.25% LEAD OR SOLDERS AND FLUX THAT CONTAINS MORE THAN 0.2% LEAD IS PROHIBITED FOR INSTALLATION OR REPAIR OF ANY PUBLIC WATER SUPPLY IN ACCORDANCE WITH 30 TAC SECTION 290.44(B).
43. DECHLORIATION OF DISINFECTING WATER SHALL BE IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARD C655.
44. NEW MAINS SHALL BE THOROUGHLY DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651 AND THEN FLUSHED AND SAMPLED BEFORE BEING PLACED IN SERVICE. SAMPLES SHALL BE COLLECTED FOR MICROBIOLOGICAL ANALYSIS TO CHECK THE EFFECTIVENESS OF THE DISINFECTION PROCEDURE. SAMPLING SHALL BE REPEATED IF CONTAMINATION PERSISTS. A MINIMUM OF ONE SAMPLE FOR EACH 1,000 FEET OF COMPLETED WATERLINE WILL BE REQUIRED OR AT THE NEXT AVAILABLE SAMPLING POINT BEYOND 1,000 FEET AS DESIGNATED BY THE DESIGN ENGINEER AS REQUIRED IN 30 TAC SECTION 290.44(F)(3).

STREET AND DRAINAGE NOTES

1. ALL SIDEWALKS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT. THE CITY OF LEANDER HAS NOT REVIEWED THESE PLANS FOR COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT, OR ANY OTHER ACCESSIBILITY LEGISLATION, AND DOES NOT WARRANTY OR APPROVE THESE PLANS FOR ANY ACCESSIBILITY STANDARDS.
2. PRIOR TO ACCEPTANCE THE ENGINEER SHALL SUBMIT DOCUMENTATION THAT THE IMPROVEMENTS WERE INSPECTED BY TDLR OR A REGISTERED ACCESSIBILITY SPECIALIST (RAS) AND ARE IN COMPLIANCE WITH THE REQUIREMENTS OF THE TABA.
3. CONTRACTOR SHALL PROVIDE QUALITY TESTING FOR ALL INFRASTRUCTURES TO BE ACCEPTED AND MAINTAINED BY THE CITY OF LEANDER AFTER COMPLETION. THE CONTRACTOR SHALL NOTIFY THE CITY OF LEANDER ENGINEERING DEPARTMENT AT 528-2700 NO LESS THAN 48 HOURS PRIOR TO ANY TESTING.
4. BACKFILL BEHIND THE CURB SHALL BE COMPACTED TO OBTAIN A MINIMUM OF 95% MAXIMUM DENSITY TO WITHIN 6" OF TOP OF CURB. MATERIAL USED SHALL BE PRIMARILY GRANULAR WITH NO ROCKS LARGER THAN 6" IN THE GREATEST DIMENSION. THE REMAINING 6" SHALL BE CLEAN TOPSOIL FREE FROM ALL CLODS AND SUITABLE FOR SUSTAINING PLANT LIFE
5. A MINIMUM OF 6" OF TOPSOIL SHALL BE PLACED BETWEEN THE CURB AND RIGHT-OF-WAY AND IN ALL DRAINAGE CHANNELS EXCEPT CHANNELS CUT IN STABLE ROCK.
6. DEPTH OF COVER FOR ALL CROSSINGS UNDER PAVEMENT, INCLUDING GAS, ELECTRIC TELEPHONE, CABLE TV, ETC., SHALL BE A MINIMUM OF 36" BELOW SUBGRADE.
7. STREET RIGHT-OF-WAY SHALL BE GRADED AT A SLOPE OF ¼" PER FOOT TOWARD THE CURB UNLESS OTHERWISE INDICATED. HOWEVER, IN NO CASE SHALL THE WIDTH OF RIGHT-OF-WAY AT ¼" PER FOOT SLOPE BE LESS THAN 10 FEET UNLESS A SPECIFIC REQUEST FOR AN ALTERNATE GRADING SCHEME IS MADE TO AND ACCEPTED BY THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT.
8. BARRICADES BUILT TO THE CITY OF LEANDER STANDARDS SHALL BE ERECTED ON ALL DEAD-END STREETS AND AS NECESSARY DURING CONSTRUCTION TO MAINTAIN JOB AND PUBLIC SAFETY.
9. ALL REINFORCED CONCRETE PIPE SHALL BE MINIMUM CLASS III OF TONGUE AND GROOVE OR O-RING JOINT DESIGN.
10. THE CONTRACTOR IS TO NOTIFY THE ENGINEERING INSPECTOR 48 HOURS PRIOR TO THE FOLLOWING TESTING: PROOF ROLLING SUB-GRADE AND EVERY LIFT OF ROADWAY EMBANKMENT, IN-PLACE DENSITY TESTING OF EVERY BASE COURSE, AND ASPHALT CORES. ALL OF THIS TESTING MUST BE WITNESSED BY A CITY OF LEANDER REPRESENTATIVE.
11. THE CONTRACTOR MUST PROVIDE A PNEUMATIC TRUCK PER TXDOT SPEC FOR PROOF ROLLING.
12. AT INTERSECTIONS WHICH HAVE VALLEY DRAINAGE, THE CROWNS OF THE INTERSECTING STREETS WILL C

KH GENERAL NOTES

OVERALL:

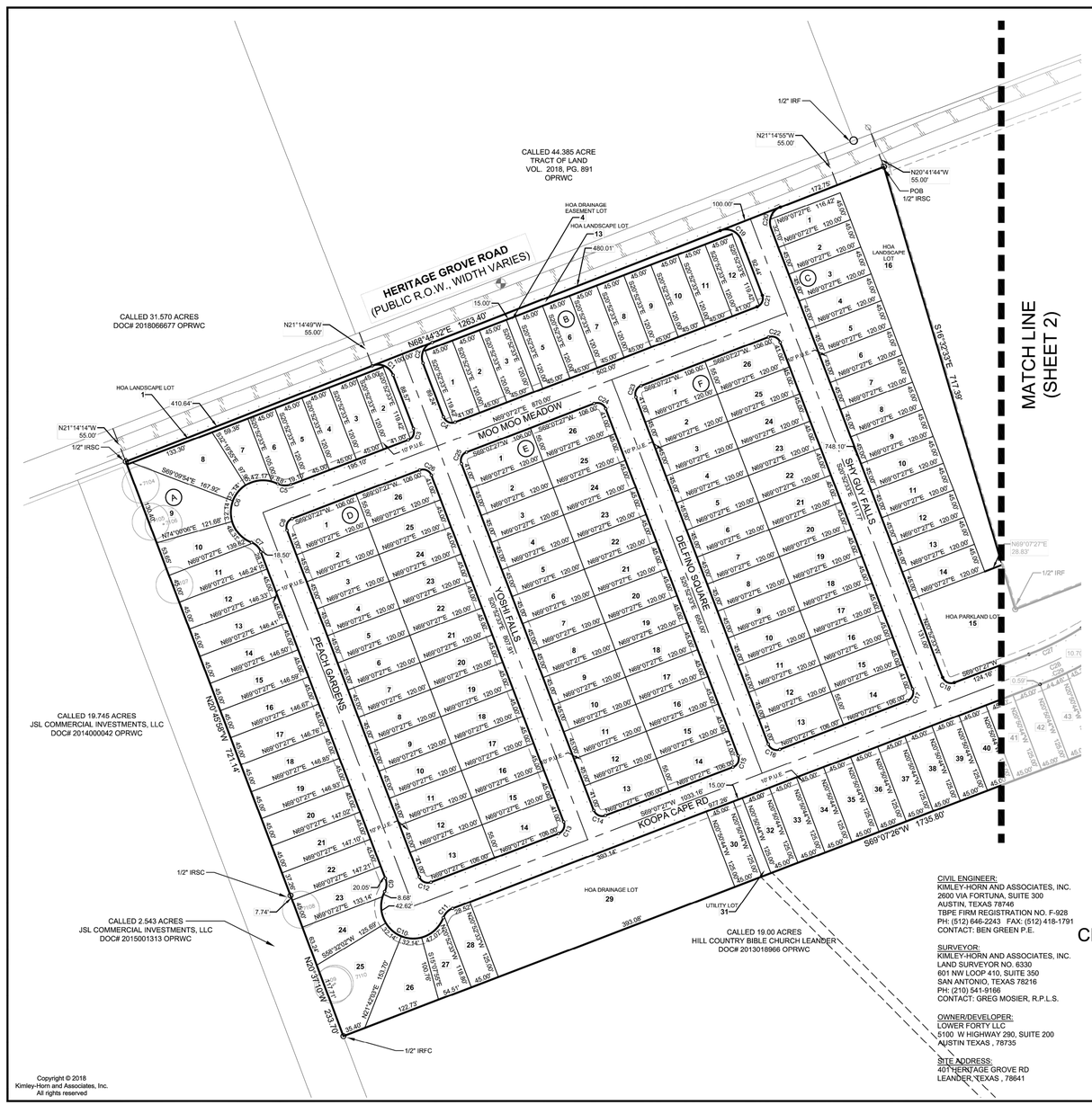
1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THESE PLANS, CITY (OR TOWN) STANDARD DETAILS AND SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND ALL ISSUED ADDENDA, AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS. THE CITY SPECIFICATIONS SHALL GOVERN WHERE OTHER SPECIFICATIONS DO NOT EXIST. IN CASE OF CONFLICTING SPECIFICATIONS OR DETAILS, THE MORE RESTRICTIVE SPECIFICATION AND DETAIL SHALL BE FOLLOWED.
2. THE CONTRACTOR SHALL COMPLY WITH CITY (OR TOWN) "GENERAL NOTES" FOR CONSTRUCTION, IF EXISTING AND REQUIRED BY THE CITY. FOR INSTANCES WHERE THEY CONFLICT WITH THESE KH GENERAL NOTES, THEN THE MORE RESTRICTIVE SHALL APPLY.
3. THE CONTRACTOR SHALL FURNISH ALL MATERIAL AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE AUTHORITIES' SPECIFICATIONS AND REQUIREMENTS.
4. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO DETERMINE EXISTING CONDITIONS.
5. THE EXISTING CONDITIONS SHOWN ON THESE PLANS WERE PROVIDED BY THE TOPOGRAPHIC SURVEY PREPARED BY THE PROJECT SURVEYOR, AND IS BASED ON THE BENCHMARKS SHOWN. THE CONTRACTOR SHALL UTILIZE THE SAME BENCHMARKS.
6. THE CONTRACTOR SHALL REVIEW AND VERIFY THE EXISTING TOPOGRAPHIC SURVEY SHOWN ON THE PLANS REPRESENTS EXISTING FIELD CONDITIONS PRIOR TO CONSTRUCTION, AND SHALL REPORT ANY DISCREPANCIES FOUND TO THE OWNER AND ENGINEER IMMEDIATELY.
7. IF THE CONTRACTOR DOES NOT ACCEPT THE EXISTING TOPOGRAPHIC SURVEY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THEN THE CONTRACTOR SHALL SUPPLY AT THEIR OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED PROFESSIONAL LAND SURVEYOR TO THE OWNER AND ENGINEER FOR REVIEW.
8. CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION SURVEYING AND STAKING.
9. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL CONTROL, INCLUDING BENCHMARKS PRIOR TO COMMENCING CONSTRUCTION OR STAKING OF IMPROVEMENTS. PROPERTY LINES AND CORNERS SHALL BE HELD AS THE HORIZONTAL CONTROL.
10. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS, ELEVATIONS, AND FIELD CONDITIONS THAT MAY AFFECT CONSTRUCTION. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE ARCHITECT, ENGINEER, AND IF APPLICABLE THE CITY AND OWNER. NO CONSIDERATION WILL BE GIVEN TO CHANGE ORDERS FOR WHICH THE CITY, ENGINEER, AND OWNER WERE NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM.
11. CONTRACTOR SHALL THOROUGHLY CHECK COORDINATION OF CIVIL, LANDSCAPE, MEP, ARCHITECTURAL, AND OTHER PLANS PRIOR TO COMMENCING CONSTRUCTION. OWNER/ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY PRIOR TO COMMENCING WITH CONSTRUCTION.
12. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES WHICH MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE COMMENCING WORK TO HAVE THEM LOCATE THEIR EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MINIMUM NOTICE TO ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION.
13. CONTRACTOR SHALL CALL TEXAS 811 AN ADEQUATE AMOUNT OF TIME PRIOR TO COMMENCING CONSTRUCTION OR ANY EXCAVATION.
14. CONTRACTOR SHALL USE EXTREME CAUTION AS THE SITE CONTAINS VARIOUS KNOWN AND UNKNOWN PUBLIC AND PRIVATE UTILITIES.
15. THE LOCATIONS, ELEVATIONS, DEPTH, AND DIMENSIONS OF EXISTING UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM AVAILABLE UTILITY COMPANY MAPS AND PLANS. ALSO CONSIDERED APPROXIMATE AND INCOMPLETE. IT SHALL BE THE CONTRACTORS' RESPONSIBILITY TO VERIFY THE PRESENCE, LOCATION, ELEVATION, DEPTH, AND DIMENSION OF EXISTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION SO THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES. THE ENGINEER SHALL BE NOTIFIED WHEN A PROPOSED IMPROVEMENT CONFLICTS WITH AN EXISTING UTILITY.
16. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ANY ADJUSTMENTS AND RELOCATIONS OF EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO, ADJUSTING EXISTING MANHOLES TO MATCH PROPOSED GRADE, RELOCATING EXISTING POLES AND GUY WIRES THAT ARE LOCATED IN PROPOSED DRIVEWAYS, ADJUSTING THE HORIZONTAL OR VERTICAL ALIGNMENT OF EXISTING UNDERGROUND UTILITIES TO CONFLICT WITH PROPOSED GRADE OR CROSSING WITH A PROPOSED UTILITY, AND ANY OTHERS THAT MAY BE ENCOUNTERED THAT ARE UNKNOWN AT THIS TIME AND NOT SHOWN ON THESE PLANS.
17. CONTRACTOR SHALL ARRANGE FOR OR PROVIDE, AT ITS EXPENSE, ALL GAS, TELECOMMUNICATIONS, CABLE, OVERHEAD AND UNDERGROUND POWER LINE, AND UTILITY POLE ADJUSTMENTS NEEDED.
18. CONTRACTOR IS RESPONSIBLE FOR COORDINATING INSTALLATION OF FRANCHISE UTILITIES THAT ARE NECESSARY FOR ON-SITE AND OFF-SITE CONSTRUCTION, AND SERVICE TO THE PROPOSED DEVELOPMENT.
19. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL DAMAGES DUE TO THE CONTRACTORS' FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UTILITIES. THE OWNER OR ENGINEER WILL ASSUME NO LIABILITY FOR ANY DAMAGES SUSTAINED OR COST INCURRED BECAUSE OF THE OPERATIONS IN THE VICINITY OF UTILITIES OR IN THE NECESSARY TO REMOVE, SUPPORT, SHORE, ENCASE, CROSSING OR RELOCATE A UTILITY, THE UTILITY COMPANY OR DEPARTMENT AFFECTED SHALL BE CONTACTED BY THE CONTRACTOR AND THEIR PERMISSION OBTAINED REGARDING THE METHOD TO USE FOR SUCH WORK.
20. BRACING OF UTILITY POLES MAY BE REQUIRED BY UTILITY COMPANIES WHEN TRENCHING OR EXCAVATING IN CLOSE PROXIMITY TO THE POLES. THE COST OF BRACING POLES WILL BE BORNE BY THE CONTRACTOR, WITH NO SEPARATE PAY ITEM FOR THIS WORK. THE COST IS INCIDENTAL TO THE PAY ITEM.
21. CONTRACTOR SHALL USE ALL NECESSARY SAFETY PRECAUTIONS TO AVOID CONTACT WITH OVERHEAD AND UNDERGROUND POWER LINES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, FEDERAL AND UTILITY OWNER REGULATIONS PERTAINING TO WORK SETBACKS FROM POWER LINES.
22. CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL REQUIRED CONSTRUCTION PERMITS, APPROVALS, AND BONDS PRIOR TO CONSTRUCTION.
23. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES A COPY OF THE CONTRACT DOCUMENTS INCLUDING PLANS, GEOTECHNICAL REPORT AND ADDENDA, PROJECT AND CITY SPECIFICATIONS, AND SPECIAL CONDITIONS, COPIES OF ANY REQUIRED CONSTRUCTION PERMITS, EROSION CONTROL PLANS, SWPPP AND INSPECTION REPORTS.
24. ALL SHOP DRAWINGS AND OTHER DOCUMENTS THAT REQUIRE ENGINEER REVIEW SHALL BE SUBMITTED BY THE CONTRACTOR SUFFICIENTLY IN ADVANCE OF CONSTRUCTION OF THAT ITEM, SO THAT NO LESS THAN 10 BUSINESS DAYS FOR REVIEW AND RESPONSE IS AVAILABLE.
25. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, JURISDICTIONAL AGENCIES, AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO USE OF THE FACILITY AND THE FINAL CONNECTION OF SERVICES.
26. CONTRACTOR SHALL ARRANGE FOR REQUIRED CITY INSPECTIONS.
27. CONTRACTOR'S BID PRICE SHALL INCLUDE ALL INSPECTION FEES.
28. ALL SYMBOLS SHOWN ON THESE PLANS (E.G. FIRE HYDRANT, METERS, VALVES, INLETS, ETC…) ARE FOR PRESENTATION PURPOSES ONLY AND ARE NOT TO SCALE. CONTRACTOR SHALL COORDINATE FINAL SIZES AND LOCATIONS WITH APPROPRIATE CITY INSPECTOR.
29. THE SCOPE OF WORK FOR THE CIVIL IMPROVEMENTS SHOWN ON THESE PLANS TERMINATES 5-FEET FROM THE BUILDING. REFERENCE THE BUILDING PLANS (E.G. ARCHITECTURAL, STRUCTURAL, MEP) FOR AREAS WITHIN 5-FEET OF THE BUILDING AND WITHIN THE BUILDING FOOTPRINT.
30. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR ALL FINAL BUILDING DIMENSIONS.
31. THE PROPOSED BUILDING FOOTPRINT(S) SHOWN IN THESE PLANS WAS PROVIDED TO KIMLEY-HORN AND ASSOCIATES, INC. (KH) BY THE PROJECT ARCHITECT AT THE TIME THESE PLANS WERE PREPARED. IT MAY NOT BE THE FINAL CORRECT VERSION BECAUSE THE BUILDING DESIGN WAS ONGOING. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFIRMING THE FINAL CORRECT VERSION OF THE BUILDING FOOTPRINT WITH THE ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO LAYOUT. DIMENSIONS AND/OR COORDINATES SHOWN ON THESE PLANS WERE BASED ON THE ABOVE STATED ARCHITECTURAL FOOTPRINT, AND ARE THEREFORE APPROXIMATE IN LOCATION OF THE BUILDING. THE CONTRACTOR IS SOLELY RESPONSIBLE TO VERIFY WHAT PART OF THE BUILDING THE ARCHITECT'S FOOTPRINT REPRESENTS (E.G. SLAB, OUTSIDE WALL, MASONRY LEDGE, ETC. …) AND TO CONFIRM ITS FINAL POSITION ON THE SITE BASED ON THE FINAL ARCHITECTURAL FOOTPRINT. CIVIL DIMENSION CONTROL PLAN, SURVEY BOUNDARY AND/OR PLAT. ANY DIFFERENCES FOUND SHALL BE REPORTED TO KH IMMEDIATELY.
32. ALL CONSTRUCTION SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING SUBSEQUENT ADDENDA.
33. CONTRACTOR IS RESPONSIBLE FOR ALL MATERIALS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL MATERIALS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND COMPLY WITH CITY STANDARD SPECIFICATIONS AND GEOTECHNICAL REPORT. TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING MATERIALS. OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR MATERIALS TESTING.
34. ALL COPIES OF MATERIALS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING AGENCY.
35. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE MATERIALS, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS.
36. DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING.
37. ALL GRADING AND EARTHWORK SHALL COMPLY WITH THE PROJECT'S FINAL GEOTECHNICAL REPORT (OR LATEST EDITION), INCLUDING SUBSEQUENT ADDENDA.
38. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, UTILITIES, MANHOLES, POLES, GUY WIRES, VALVE COVERS, VAULT LIDS, FIRE HYDRANTS, COMMUNICATION BOXES/PEDESTALS, AND OTHER FACILITIES TO REMAIN AND SHALL REPAIR ANY DAMAGES AT NO COST TO THE OWNER.
39. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PRIVATE PROPERTY OR PUBLIC IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO: FENCES, WALLS, SIGNS, PAVEMENT, CURBS, UTILITIES, SIDEWALKS, GRASS, TREES, LANDSCAPING, AND IRRIGATION SYSTEMS, ETC… TO ORIGINAL CONDITION OR BETTER AT NO COST TO THE OWNER.
40. ALL AREAS IN EXISTING RIGHT-OF-WAY DISTURBED BY SITE CONSTRUCTION SHALL BE REPAIRED TO ORIGINAL CONDITION OR BETTER, INCLUDING AS NECESSARY GRADING, LANDSCAPING, CULVERTS, AND PAVEMENT.
41. THE CONTRACTOR SHALL SALVAGE ALL EXISTING POWER POLES, SIGNS, WATER VALVES, FIRE HYDRANTS, METERS, ETC… THAT ARE TO BE RELOCATED DURING CONSTRUCTION.
42. CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES.
43. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SUBMITTING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS. TO THE CITY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REQUIREMENTS, INCLUDING OSHA FOR ALL TRENCHES. NO OPEN TRENCHES SHALL BE ALLOWED OVERNIGHT WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY.
44. THE CONTRACTOR SHALL KEEP TRENCHES FREE FROM WATER.
45. SITE SAFETY IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
46. THESE PLANS DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE ENGINEER'S SEAL HEREIN DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF ALL REQUIRED SAFETY PROCEDURES AND PROGRAMS.
47. SIGNS RELATED TO SITE OPERATION OR SAFETY ARE NOT INCLUDED IN THESE PLANS.
48. CONTRACTOR OFFICE AND STAGING AREA SHALL BE AGREED ON BY THE OWNER AND CONTRACTOR PRIOR TO BEGINNING OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITTING REQUIREMENTS FOR THE CONSTRUCTION OFFICE, TRAILER, STORAGE, AND STAGING OPERATIONS AND LOCATIONS.
49. LIGHT POLES, SIGNS, AND OTHER OBSTRUCTIONS SHALL NOT BE PLACED IN ACCESSIBLE ROUTES.
50. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
51. TOP RIM ELEVATIONS OF ALL EXISTING AND PROPOSED MANHOLES SHALL BE COORDINATED WITH TOP OF PAVEMENT OR FINISHED GRADE AND SHALL BE ADJUSTED TO BE FLUSH WITH THE ACTUAL FINISHED GRADE AT THE TIME OF PAVING.
52. CONTRACTOR SHALL ADJUST ALL EXISTING AND PROPOSED VALVES, FIRE HYDRANTS, AND OTHER UTILITY APPURTENANCES TO MATCH ACTUAL FINISHED GRADES AT THE TIME OF PAVING.
53. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION SEQUENCING AND PHASING, AND SHALL CONTACT THE APPROPRIATE CITY OFFICIALS, INCLUDING BUILDING OFFICIAL, ENGINEERING INSPECTOR, AND FIRE MARSHALL TO LEARN OF ANY REQUIREMENTS.
54. CONTRACTOR IS RESPONSIBLE FOR PREPARATION, SUBMITTAL, AND APPROVAL BY THE CITY OF A TRAFFIC CONTROL PLAN PRIOR TO THE START OF CONSTRUCTION, AND THEN THE IMPLEMENTATION OF THE PLAN.
55. CONTRACTOR SHALL KEEP A NEAT AND ACCURATE RECORD OF CONSTRUCTION, INCLUDING ANY DEVIATIONS OR VARIANCES FROM THE PLANS.
56. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AS-BUILT PLANS TO THE ENGINEER AND CITY IDENTIFYING ALL DEVIATIONS AND VARIATIONS FROM THESE PLANS MADE DURING CONSTRUCTION.

EROSION CONTROL:

1. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL EROSION CONTROL AND WATER QUALITY REQUIREMENTS, LAWS, AND ORDINANCES THAT APPLY TO THE CONSTRUCTION SITE LAND DISTURBANCE.
2. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE "TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM TXR 150000".
3. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF LAND DISTURBANCE.
4. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR THE PROJECT.
5. CONTRACTOR IS SOLELY RESPONSIBLE FOR INSTALLATION, IMPLEMENTATION, MAINTENANCE, AND EFFECTIVENESS OF ALL EROSION CONTROL DEVICES, BEST MANAGEMENT PRACTICES (BMPS), AND FOR UPDATING THE EROSION CONTROL PLAN DURING CONSTRUCTION AS FIELD CONDITIONS CHANGE.
6. CONTRACTOR SHALL DOCUMENT THE DATES OF INSTALLATION, MAINTENANCE OR MODIFICATION, AND REMOVAL FOR EACH BMP EMPLOYED IN THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF APPLICABLE.
7. AS STORM SEWER INLETS ARE INSTALLED ON-SITE, TEMPORARY EROSION CONTROL DEVICES SHALL BE INSTALLED AT EACH INLET PER APPROVED DETAILS.
8. THE EROSION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL THE AREA IT PROTECTS HAS BEEN PERMANENTLY STABILIZED.
9. CONTRACTOR SHALL PROVIDE ADEQUATE EROSION CONTROL DEVICES NEEDED DUE TO PROJECT PHASING.
10. CONTRACTOR SHALL OBSERVE THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES AND MAKE FIELD ADJUSTMENTS AND MODIFICATIONS AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE SITE. IF THE EROSION CONTROL DEVICES DO NOT EFFECTIVELY CONTROL EROSION AND PREVENT SEDIMENTATION FROM WASHING OFF THE SITE, THEN THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
11. OFF-SITE SOIL BORROW, SPOIL, AND STORAGE AREAS (IF APPLICABLE) ARE CONSIDERED AS PART OF THE PROJECT SITE AND MUST ALSO COMPLY WITH THE EROSION CONTROL REQUIREMENTS FOR THIS PROJECT. THIS INCLUDES THE INSTALLATION OF BMP'S TO CONTROL EROSION AND SEDIMENTATION AND THE ESTABLISHMENT OF PERMANENT GROUND COVER ON DISTURBED AREAS PRIOR TO FINAL APPROVAL OF THE PROJECT. CONTRACTOR IS RESPONSIBLE FOR MODIFYING THE SWPPP AND EROSION CONTROL PLAN TO INCLUDE BMPS FOR ANY OFF-SITE THAT ARE NOT ANTICIPATED OR SHOWN ON THE EROSION CONTROL PLAN.
12. ALL STAGING, STOCKPILES, SPOIL, AND STORAGE SHALL BE LOCATED SUCH THAT THEY WILL NOT ADVERSELY AFFECT STORM WATER QUALITY. PROTECTIVE MEASURES SHALL BE PROVIDED IF NEEDED TO ACCOMPLISH THIS REQUIREMENT, SUCH AS COVERING OR ENCIRCLING THE AREA WITH AN APPROPRIATE BARRIER.
13. CONTRACTOR SHALL INSPECT ALL CONSTRUCTION DEVICES, BMPS, DISTURBED AREAS, AND VEHICLE ENTRY AND EXIT AREAS WEEKLY AND WITHIN 24 HOURS OF ALL RAINFALL EVENTS OF 0.5 INCHES OR GREATER, AND KEEP A RECORD OF THIS INSPECTION IN THE SWPPP BOOKLET IF APPLICABLE, TO VERIFY THAT THE DEVICES AND EROSION CONTROL PLAN ARE FUNCTIONING PROPERLY.
14. CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT ALL PRIMARY POINTS OF ACCESS IN ACCORDANCE WITH CITY SPECIFICATIONS. CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION TRAFFIC USES THE STABILIZED ENTRANCE AT ALL TIMES FOR ALL INGRESS/EGRESS.
15. SITE ENTRY AND EXITS SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT THE TRACKING AND FLOWING OF SEDIMENT AND DIRT ONTO OFF-SITE ROADWAYS. ALL SEDIMENT AND DIRT FROM THE SITE THAT IS DEPOSITED ONTO AN OFF-SITE ROADWAY SHALL BE REMOVED IMMEDIATELY.
16. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SILT AND DEBRIS FROM THE AFFECTED OFF-SITE ROADWAYS THAT ARE A RESULT OF THE CONSTRUCTION, AS REQUESTED BY OWNER AND CITY. AT A MINIMUM, THIS SHOULD OCCUR ONCE PER DAY FOR THE OFF-SITE ROADWAYS.
17. WHEN WASHING OF VEHICLES IS REQUIRED TO REMOVE SEDIMENT PRIOR TO EXITING THE SITE, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP BMP.
18. CONTRACTOR SHALL INSTALL A TEMPORARY SEDIMENT BASIN FOR ANY ON-SITE DRAINAGE AREAS THAT ARE GREATER THAN 10 ACRES, PER TCEQ AND CITY STANDARDS. IF NO ENGINEERING DESIGN HAS BEEN PROVIDED FOR A SEDIMENTATION BASIN ON THESE PLANS, THEN THE CONTRACTOR SHALL PROVIDE AN APPROPRIATE DESIGN FOR REVIEW AND APPROVAL.
19. ALL FINES IMPOSED FOR SEDIMENT OR DIRT DISCHARGED FROM THE SITE SHALL BE PAID BY THE RESPONSIBLE CONTRACTOR.
20. WHEN SEDIMENT OR DIRT HAS CLOGGED THE CONSTRUCTION ENTRANCE VOID SPACES BETWEEN STONES OR DIRT IS BEING TRACKED ONTO A ROADWAY, THE AGGREGATE PAD MUST BE WASHED DOWN OR REPLACED. RUNOFF FROM THE WASH-DOWN OPERATION SHALL NOT BE ALLOWED TO DRAIN DIRECTLY OFF SITE WITHOUT FIRST FLOWING THROUGH ANOTHER BMP TO CONTROL SEDIMENTATION. PERIODIC RE-GRADING OR NEW STONE MAY BE REQUIRED TO MAINTAIN THE EFFECTIVENESS OF THE CONSTRUCTION ENTRANCE.
21. TEMPORARY SEDIMENT AND EROSION STABILIZATION SHALL BE INITIATED WITHIN 14 DAYS OF THE LAST DISTURBANCE OF ANY AREA, UNLESS ADDITIONAL CONSTRUCTION IN THE AREA IS EXPECTED WITHIN 21 DAYS OF THE LAST DISTURBANCE.
22. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING CONSTRUCTION, ALWAYS CLEANING UP DIRT, LOOSE MATERIAL, AND TRASH AS CONSTRUCTION AND GRUBBING SHALL BE REMOVED FROM THE SITE AND APPROPRIATELY DISPOSED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE.
23. EROSION CONTROL DEVICES SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF GRADING. REFERENCE EROSION CONTROL PLAN, DETAILS, GENERAL NOTES, AND SWPPP FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
24. BEFORE ANY EARTHWORK IS PERFORMED, THE CONTRACTOR SHALL STAKE OUT AND MARK THE LIMITS OF THE PROJECT'S PROPERTY LINE AND THE IMPROVEMENTS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK.
25. CONTRACTOR TO DISPOSE OF ALL EXCESS EXCAVATION MATERIALS IN A MANNER THAT ADHERES TO LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS. THE CONTRACTOR SHALL KEEP A RECORD OF WHERE EXCESS EXCAVATION WAS DISPOSED, ALONG WITH THE RECEIVING LANDOWNER'S APPROVAL TO DO SO.
26. CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF TOPSOIL AT THE COMPLETION OF FINE GRADING. CONTRACTOR SHALL REFER TO LANDSCAPE ARCHITECTURAL PLANS FOR SPECIFICATIONS AND REQUIREMENTS FOR TOPSOIL.
27. CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION, INCLUDING MAINTAINING EXISTING DITCHES OR CULVERTS FREE OF OBSTRUCTIONS AT ALL TIMES.
28. NO EARTHWORK FILL SHALL BE PLACED IN ANY EXISTING DRAINAGE WAY, SWALE, CHANNEL, DITCH, CREEK, OR FLOODPLAIN FOR ANY REASON OF ANY LENGTH OF TIME, UNLESS THE PLANS SPECIFICALLY INDICATE THIS IS REQUIRED.
29. TEMPORARY CULVERTS MAY BE REQUIRED IN SOME LOCATIONS TO CONVEY RUN-OFF.
30. REFER TO DIMENSION CONTROL PLAN, AND PLAT FOR HORIZONTAL DIMENSIONS.
31. THE CONTRACTOR SHALL CLEAR AND GRUB, EXCAVATE, PLACE, COMPACT, AND CONDITION FILL PER THE PROJECT GEOTECHNICAL ENGINEER'S SPECIFICATIONS. THE FILL MATERIAL TO BE USED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.
32. CONTRACTOR IS RESPONSIBLE FOR ALL SOILS TESTING AND CERTIFICATION, UNLESS SPECIFIED OTHERWISE BY OWNER. ALL SOILS TESTING SHALL BE COORDINATED WITH THE APPROPRIATE CITY INSPECTOR AND SHALL COMPLY WITH CITY STANDARD SPECIFICATIONS AND THE GEOTECHNICAL REPORT. SOILS TESTING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY FOR TESTING SOILS. THE OWNER SHALL APPROVE THE AGENCY NOMINATED BY THE CONTRACTOR FOR SOILS TESTING.
33. ALL COPIES OF SOILS TEST RESULTS SHALL BE SENT TO THE OWNER, ENGINEER AND ARCHITECT DIRECTLY FROM THE TESTING AGENCY.
34. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SHOW, BY THE STANDARD TESTING PROCEDURES OF THE SOILS, THAT THE WORK CONSTRUCTED MEETS THE PROJECT REQUIREMENTS AND CITY SPECIFICATIONS.
35. THE SCOPE OF WORK FOR CIVIL IMPROVEMENT SHOWN ON THESE PLANS TERMINATES 5-FEET FROM THE BUILDING. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT AND STRUCTURAL PLANS AND SPECIFICATIONS FILL, CONDITIONING, AND PREPARATION IN THE BUILDING PAD.
36. DUE TO THE POTENTIAL FOR DIFFERENTIAL SOIL MOVEMENT ADJACENT TO THE BUILDING, THE CONTRACTOR SHALL ADHERE TO GEOTECHNICAL REPORT'S RECOMMENDATION FOR SUBGRADE PREPARATION SPECIFIC TO FLATWORK ADJACENT TO THE PROPOSED BUILDING. THE OWNER AND CONTRACTOR ARE ADVISED TO OBTAIN A GEOTECHNICAL ENGINEER RECOMMENDATION SPECIFIC TO FLATWORK ADJACENT TO THE BUILDING, IF NONE IS CURRENTLY EXISTING.
37. THIS PLAN SHALL BE CONSIDERED TO GIVE A GENERAL GUIDE TO THE CONTRACTOR, NOTHING MORE. THE GOAL OF THE DEMOLITION IS TO LEAVE THE SITE IN A STATE SUITABLE FOR THE CONSTRUCTION OF THE PROPOSED DEVELOPMENT. REMOVAL OR PRESERVATION OF IMPROVEMENTS, UTILITIES, ETC. TO ACCOMPLISH THIS GOAL ARE THE RESPONSIBILITY OF THE CONTRACTOR.
38. CONTRACTOR IS STRONGLY CAUTIONED TO REVIEW THE FOLLOWING REPORTS DESCRIBING SITE CONDITIONS PRIOR TO BIDDING AND IMPLEMENTING THE DEMOLITION PLAN:
    a. ENVIRONMENTAL SITE ASSESSMENT PROVIDED BY THE OWNER,
    b. ASBESTOS BUILDING INSPECTION REPORT(S) PROVIDED BY THE OWNER,
    c. GEOTECHNICAL REPORT PROVIDED BY THE OWNER.
    d. OTHER REPORTS THAT ARE APPLICABLE AND AVAILABLE.
39. CONTRACTOR SHALL VERIFY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS REGARDING THE DEMOLITION OF OBJECTS ON THE SITE AND THE DISPOSAL OF THE DEMOLISHED MATERIALS OFF-SITE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO REVIEW THE SITE, DETERMINE THE APPLICABLE REGULATIONS, RECEIVE THE REQUIRED PERMITS AND AUTHORIZATIONS, AND COMPLY.
40. KH DOES NOT REPRESENT THAT THE REPORTS AND SURVEYS REFERENCED ABOVE ARE ACCURATE, COMPLETE, OR COMPREHENSIVE SHOWING ALL ITEMS THAT WILL NEED TO BE DEMOLISHED AND REMOVED.
41. SURFACE PAVEMENT INDICATED MAY OVERLAY OTHER HIDDEN STRUCTURES, SUCH AS ADDITIONAL LAYERS OF PAVEMENT, FOUNDATIONS OR WALLS, THAT ARE ALSO TO BE REMOVED.

GRADING:

1. THE CONTRACTOR AND GRADING SUBCONTRACTOR SHALL VERIFY THE SUITABILITY OF EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE START OF CONSTRUCTION. THE CIVIL ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
2. CONTRACTOR SHALL OBTAIN ANY REQUIRED GRADING PERMITS FROM THE CITY.
3. UNLESS OTHERWISE NOTED, PROPOSED CONTOURS AND SPOT ELEVATIONS SHOWN IN PAVED AREA REFLECT TOP OF PAVEMENT SURFACE. IN LOCAT



GENERAL INFORMATION:

TOTAL ACREAGE	30.434 ACRES
TOTAL LINEAR FEET OF ROW	5721'
ACREAGE OF ROW	6.58 ACRES
NUMBER OF SINGLE FAMILY LOTS	152
ACREAGE OF SINGLE FAMILY LOTS	20.38 ACRES
NUMBER OF OPEN SPACE & AMENITY LOTS	4
ACREAGE OF OPEN SPACE LOTS	2.26 ACRES
NUMBER OF UTILITY LOTS	1
ACREAGE OF UTILITY LOTS	0.04 ACRES
NUMBER OF DRAINAGE LOTS	2
ACREAGE OF DRAINAGE LOTS	1.17 ACRES
TOTAL NUMBER OF LOTS	159
TOTAL NUMBER OF BLOCKS	6

RESERVE AT NORTH FORK
FINAL PLAT
30.434 ACRES
401 HERITAGE GROVE
CHARLES COCHRAN LEAGUE SURVEY, ABSTRACT NO. 134
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

CIVIL ENGINEER:
KIMLEY-HORN AND ASSOCIATES, INC.
2600 VIA FORTUNA, SUITE 300
AUSTIN, TEXAS 78746
TBPE FIRM REGISTRATION NO. F-928
PH: (512) 646-2243 FAX: (512) 418-1791
CONTACT: BEN GREEN P.E.

SURVEYOR:
KIMLEY-HORN AND ASSOCIATES, INC.
LAND SURVEYOR NO. 6330
601 NW LOOP 410, SUITE 350
SAN ANTONIO, TEXAS 78216
PH: (210) 541-9166
CONTACT: GREG MOSIER, R.P.L.S.

OWNER/DEVELOPER:
LOWER FORTY LLC
5100 W HIGHWAY 290, SUITE 200
AUSTIN TEXAS , 78735

SITE ADDRESS:
401 HERITAGE GROVE RD
LEANDER, TEXAS , 78641

Kimley»Horn
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Austin, Texas 78746
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Scale	Drawn by	Checked by	Date	Project No.	Sheet No.
AS NOTED	AJD	ORB	9/25/2020	069312667	2 OF 5

BENCHMARKS

BM #101, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT

- ELEV.=1002.370' (NAVD '88)

BM #102, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 40.57 ACRE TRACT BELONGING TO UPPER FORTY, LLC

- ELEV.=995.150' (NAVD '88)

DWG NAME: K:\SAU_Civil\069312667 PULTE LEANDER S 40\CAD\PRELIMINARY\PLANSHEETS\PULTE PLAT.DWG PLOTTED BY: OSTERMAN, CHRIS 9/25/2020 9:26 AM LAST SAVED: 9/25/2020 9:08 AM

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2017 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, AVALLON IV, SUITE 300, AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

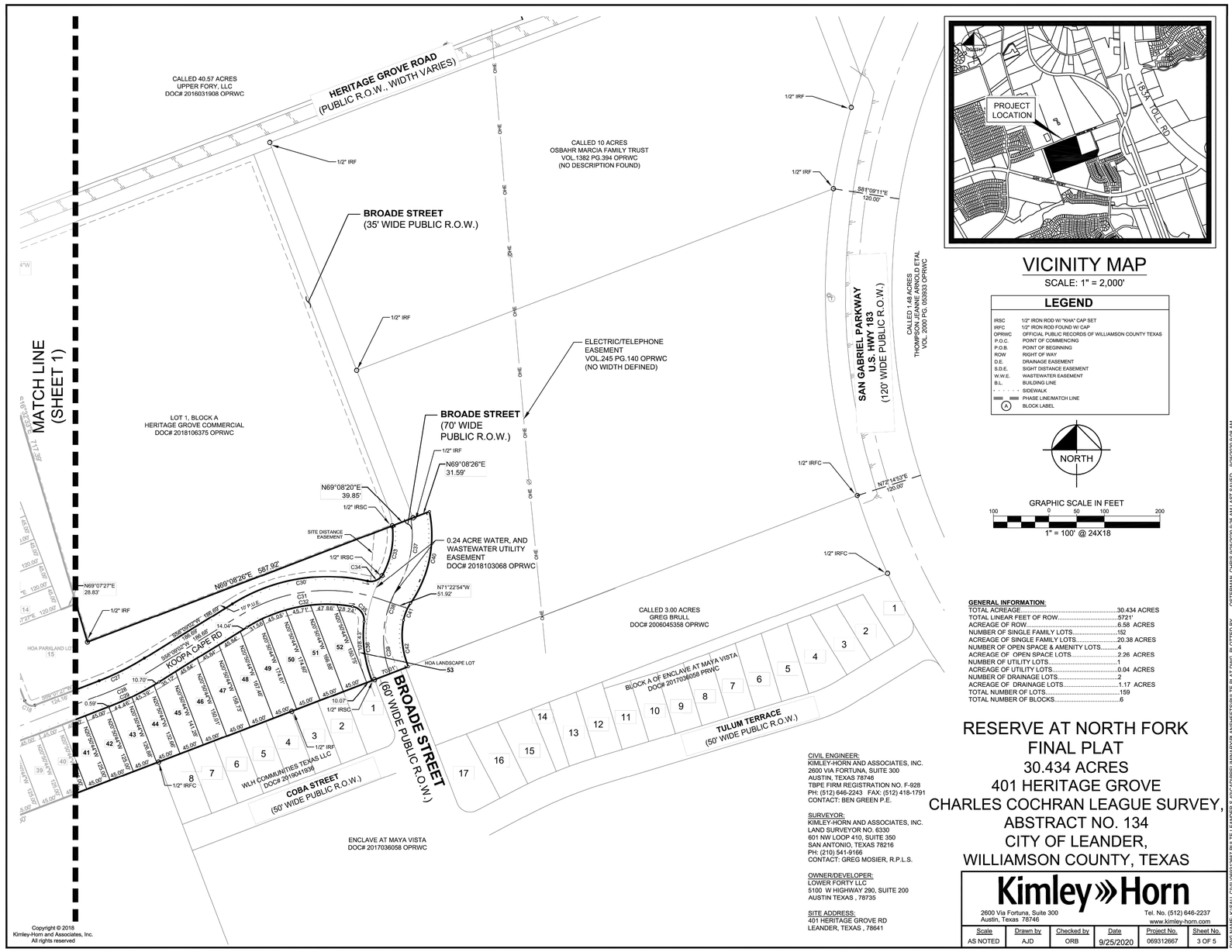
STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE:	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

FINAL PLAT
(SHEET 1 OF 4)

RESERVE AT NORTH FORK
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
4 OF 48



VICINITY MAP

SCALE: 1" = 2,000'

LEGEND

IRSC	1/2" IRON ROD W/ "KHA" CAP SET
IRFC	1/2" IRON ROD FOUND W/ CAP
OPRWC	OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY TEXAS
P.O.C.	POINT OF COMMENCING
P.O.B.	POINT OF BEGINNING
ROW	RIGHT OF WAY
D.E.	DRAINAGE EASEMENT
S.D.E.	SIGHT DISTANCE EASEMENT
W.W.E.	WASTEWATER EASEMENT
B.L.	BUILDING LINE
	SIDEWALK
	PHASE LINE/MATCH LINE
(A)	BLOCK LABEL

GENERAL INFORMATION:

TOTAL ACREAGE	30.434 ACRES
TOTAL LINEAR FEET OF ROW	572+'
ACREAGE OF ROW	6.58 ACRES
NUMBER OF SINGLE FAMILY LOTS	152
ACREAGE OF SINGLE FAMILY LOTS	20.38 ACRES
NUMBER OF OPEN SPACE & AMENITY LOTS	4
ACREAGE OF OPEN SPACE LOTS	2.26 ACRES
NUMBER OF UTILITY LOTS	1
ACREAGE OF UTILITY LOTS	0.04 ACRES
NUMBER OF DRAINAGE LOTS	2
ACREAGE OF DRAINAGE LOTS	1.17 ACRES
TOTAL NUMBER OF LOTS	159
TOTAL NUMBER OF BLOCKS	6

RESERVE AT NORTH FORK
FINAL PLAT
30.434 ACRES
401 HERITAGE GROVE
CHARLES COCHRAN LEAGUE SURVEY, ABSTRACT NO. 134
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

CIVIL ENGINEER:
KIMLEY-HORN AND ASSOCIATES, INC.
2600 VIA FORTUNA, SUITE 300
AUSTIN, TEXAS 78746
TBPE FIRM REGISTRATION NO. F-928
PH: (512) 646-2243 FAX: (512) 418-1791
CONTACT: BEN GREEN P.E.

SURVEYOR:
KIMLEY-HORN AND ASSOCIATES, INC.
LAND SURVEYOR NO. 6330
601 NW LOOP 410, SUITE 350
SAN ANTONIO, TEXAS 78216
PH: (210) 541-9166
CONTACT: GREG MOSIER, R.P.L.S.

OWNER/DEVELOPER:
LOWER FORTY LLC
5100 W HIGHWAY 290, SUITE 200
AUSTIN TEXAS , 78735

SITE ADDRESS:
401 HERITAGE GROVE RD
LEANDER, TEXAS , 78641

Kimley»Horn
2600 Via Fortuna, Suite 300
Austin, Texas 78746
Tel. No. (512) 646-2237
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Scale	Drawn by	Checked by	Date	Project No.	Sheet No.
AS NOTED	AJD	ORB	9/25/2020	069312667	3 OF 5

DWG NAME: K:\SAU_CIVIL\069312667 PULTE LEANDER S 401\CAD\PRELIM\NARYPLAN\SHEETS\PULTE PLAT.DWG PLOTTED BY: OSTERMAN, CHRIS 9/25/2020 9:29 AM LAST SAVED 9/25/2020 9:08 AM

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STATE OF TEXAS
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09-29-2020

KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	BG
CHECKED BY:	BG

FINAL PLAT
(SHEET 2 OF 4)

RESERVE AT NORTH FORK
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
5 OF 48

A METES AND BOUNDS DESCRIPTION OF A 29.984 ACRE TRACT OF LAND

BEING a 29.984 (1,306,092 square feet) tract of land out of the Charles Cochran League Survey, Abstract No. 134, Williamson County, Texas; being a portion of that certain 40.692 acre tract described in instrument to Lower Forty, LLC in Document No. 2016031907 of the Official Public Records of Williamson County; and being more particularly described as follows:

BEGINNING at a 1/2 inch iron rod with plastic cap stamped "KHA" set on the southeasterly right-of-way line of Heritage Grove Road (Variable Width Right-of-Way) marking the northwestern-most corner of Lot 1, Block A of Heritage Grove Commercial Subdivision, plat of which is recorded in Document No. 2018106375 of the Official Public Records of Williamson County;

THENCE, along the common line of said 40.659 acre tract and said Lot 1 the following two (2) courses and distances:

1. South 16°32'33" East, 717.39 feet to a 1/2 inch iron rod found for corner;
2. North 69°08'26" East, 587.91 feet to a 1/2 inch iron rod with plastic cap stamped "KHA" set at the terminus of the southwesterly right-of-way line of Broade Street (a 35 foot wide public right-of-way) marking the northwesterly-most corner of a 0.24 acre water and wastewater utility easement recorded in Document No. 2018103068 of the Official Public Records of Williamson County;

THENCE, along the said 0.24 acre water and wastewater utility easement the following two (2) courses and distances:

1. in a southerly direction, along a non-tangent curve to the right, a central angle of 36°51'02", a radius of 145.00 feet, a chord bearing and distance of South 11°36'33" West, 91.66 feet, and a total arc length of 93.26 feet to a 1/2 inch iron rod with plastic cap stamped "KHA" set at a point of reverse curvature;
2. in a southerly direction, along a non-tangent curve to the left, a central angle of 51°50'25", a radius of 215.10 feet, a chord bearing and distance of South 4°07'51" West, 188.05 feet, and a total arc length of 194.62 feet to a 1/2 inch iron rod with plastic cap stamped "KHA" set for corner;

THENCE, South 69°07'26" West, 1670.79 feet along the northeasterly boundary of the Enclave at Maya Vista Subdivision, plat of which is recorded in Document No. 2017036058 of the Official Public Records of Williamson County, and that certain 19.00 acre tract described in instrument to Hill Country Bible Church Leander in Document No. 2013018966 of the Official Public Records of Williamson County to a 1/2 inch iron rod with plastic cap found for corner on the northeasterly line of that certain 2.543 acre tract described in instrument to DSL Commercial Investments, LLC in Document No. 2015001313 of the Official Public Records of Williamson County;

THENCE, along the northeasterly boundary of the said 2.543 acre tract, the following two (2) courses and distances:

1. North 20°37'10" West, 233.70 feet to a 1/2 inch iron rod with plastic cap stamped "KHA" set for corner;
2. North 20°45'58" West, 721.14 feet to a 1/2 inch iron rod with plastic cap stamped "KHA" set marking the northwestern-most corner of the aforesaid 40.659 acre tract on the aforesaid southeasterly right-of-way of Heritage Grove Road;

THENCE North 68°44'32" East, 1263.40 feet to the **POINT OF BEGINNING** and containing 29.984 acres of land in Williamson County, Texas. The basis of bearing for this description is the Texas State Plane Coordinate System Grid, Central Zone (FIPS 4203) (NAD'83). All distances are on the Grid and shown in U.S. Survey Feet. This document was prepared in the office of Kimley-Horn and Associates, Inc. in San Antonio, Texas.

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C1	90°22'52"	25.00'	39.44'	S66°04'01"E	35.47'
C2	89°37'02"	25.00'	39.10'	N23°56'00"E	35.24'
C3	90°00'00"	14.00'	21.99'	S24°07'27"W	19.80'
C4	90°00'00"	14.00'	21.99'	N65°52'33"W	19.80'
C5	48°11'23"	25.00'	21.03'	N86°46'52"W	20.41'
C6	186°22'46"	50.00'	162.65'	S24°07'27"W	99.85'
C7	48°11'21"	25.00'	21.03'	S44°58'16"E	20.41'
C8	90°00'00"	14.00'	21.99'	S24°07'27"W	19.80'
C9	48°11'23"	25.00'	21.03'	S03°13'08"W	20.41'
C10	186°22'46"	50.00'	162.65'	S65°52'33"E	99.85'
C11	48°11'23"	25.00'	21.03'	N45°01'45"E	20.41'
C12	90°00'00"	14.00'	21.99'	S65°52'33"E	19.80'
C13	90°00'00"	14.00'	21.99'	N24°07'27"E	19.80'
C14	90°00'00"	14.00'	21.99'	S65°52'33"E	19.80'
C15	90°00'00"	14.00'	21.99'	N24°07'27"E	19.80'
C16	90°00'00"	14.00'	21.99'	S65°52'33"E	19.80'
C17	90°00'00"	14.00'	21.99'	N24°07'27"E	19.80'
C18	90°00'00"	14.00'	21.99'	N65°52'33"W	19.80'
C19	90°22'55"	25.00'	39.44'	S66°04'01"E	35.47'
C20	89°37'05"	25.00'	39.10'	N23°55'59"E	35.24'
C21	90°00'00"	14.00'	21.99'	S24°07'27"W	19.80'
C22	90°00'00"	14.00'	21.99'	N65°52'33"W	19.80'
C23	90°00'00"	14.00'	21.99'	S24°07'27"W	19.80'
C24	90°00'00"	14.00'	21.99'	N65°52'33"W	19.80'
C25	90°00'00"	14.00'	21.99'	S24°07'27"W	19.80'
C26	90°00'00"	14.00'	21.99'	N65°52'33"W	19.80'
C27	10°58'25"	475.00'	90.97'	S63°38'14"W	90.84'
C28	10°58'25"	500.00'	95.76'	S63°38'14"W	95.62'
C29	10°58'25"	525.00'	100.55'	N63°38'14"E	100.40'
C30	44°41'51"	325.00'	253.54'	S80°29'58"W	247.16'
C31	50°36'40"	298.41'	263.60'	S83°18'45"W	255.11'
C32	42°26'17"	267.89'	198.42'	N78°47'44"E	193.92'
C33	35°40'58"	145.37'	90.53'	S11°04'19"W	89.08'
C34	73°53'18"	25.00'	32.24'	S65°54'15"W	30.05'
C35	87°01'01"	25.00'	37.97'	S37°03'04"E	34.42'
C36	28°13'34"	220.10'	108.43'	S07°39'21"E	107.34'
C37	40°41'15"	180.09'	127.89'	S10°46'05"W	125.22'
C38	51°39'14"	180.10'	162.37'	S05°17'05"W	156.92'
C39	51°39'14"	180.10'	162.37'	S05°17'05"W	156.92'

BLOCK A

LOT TABLE

LOT NO.	ACRES	SQ. FT.
1	0.086	3,762
2	0.124	5,399
3	0.124	5,400
4	0.124	5,400
5	0.124	5,400
6	0.121	5,266
7	0.111	4,826
8	0.203	8,860
9	0.251	10,940
10	0.140	6,094
11	0.150	6,544
12	0.151	6,583
13	0.151	6,587
14	0.151	6,591
15	0.151	6,594
16	0.151	6,598
17	0.152	6,602
18	0.152	6,606
19	0.152	6,610
20	0.152	6,614
21	0.152	6,618
22	0.152	6,622
23	0.149	6,509
24	0.148	6,451
25	0.276	12,007
26	0.193	8,401
28	0.128	5,593
29	1.128	49,138
30	0.129	5,625
32	0.129	5,625
33	0.129	5,625
34	0.129	5,625
35	0.129	5,625
36	0.129	5,625
37	0.129	5,625
38	0.129	5,625
39	0.129	5,625
40	0.129	5,625
41	0.129	5,625
42	0.129	5,625

BLOCK B

LOT TABLE

LOT NO.	ACRES	SQ. FT.
1	0.124	5,399
2	0.124	5,400
3	0.124	5,400
4	0.041	1,800
5	0.124	5,400
6	0.124	5,400
7	0.124	5,400
8	0.124	5,400
9	0.124	5,400
10	0.124	5,400
11	0.124	5,400
12	0.124	5,399
13	0.167	7,264

BLOCK C

LOT TABLE

LOT NO.	ACRES	SQ. FT.
1	0.124	5,385
2	0.124	5,400
3	0.124	5,400
4	0.124	5,400
5	0.124	5,400
6	0.124	5,400
7	0.124	5,400
8	0.124	5,400
9	0.124	5,400
10	0.124	5,400
11	0.124	5,400
12	0.124	5,400
13	0.124	5,400
14	0.124	5,400
15	1.120	48,773

LOT TABLE

LOT NO.	ACRES	SQ. FT.
43	0.130	5,653
44	0.134	5,825
45	0.141	6,162
46	0.150	6,554
47	0.159	6,947
48	0.168	7,339
50	0.181	7,886

BLOCK D

LOT TABLE

LOT NO.	ACRES	SQ. FT.
1	0.151	6,558
2	0.124	5,400
3	0.124	5,400
4	0.124	5,400
5	0.124	5,400
6	0.124	5,400
7	0.124	5,400
8	0.124	5,400
9	0.124	5,400
10	0.124	5,400
11	0.124	5,400
12	0.124	5,400
13	0.151	6,558
14	0.151	6,558
15	0.124	5,400
16	0.124	5,400
17	0.124	5,400
18	0.124	5,400
19	0.124	5,400
20	0.124	5,400
21	0.124	5,400
22	0.124	5,400
23	0.124	5,400
24	0.124	5,400
25	0.124	5,400
26	0.151	6,558

BLOCK E

LOT TABLE

LOT NO.	ACRES	SQ. FT.
1	0.151	6,558
2	0.124	5,400
3	0.124	5,400
4	0.124	5,400
5	0.124	5,400
6	0.124	5,400
7	0.124	5,400
8	0.124	5,400
9	0.124	5,400
10	0.124	5,400
11	0.124	5,400
12	0.124	5,400
13	0.151	6,558
14	0.151	6,558
15	0.124	5,400
16	0.124	5,400
17	0.124	5,400
18	0.124	5,400
19	0.124	5,400
20	0.124	5,400
21	0.124	5,400
22	0.124	5,400
23	0.124	5,400
24	0.124	5,400
25	0.124	5,400
26	0.151	6,558

BLOCK F

LOT TABLE

LOT NO.	ACRES	SQ. FT.
1	0.151	6,558
2	0.124	5,400
3	0.124	5,400
4	0.124	5,400
5	0.124	5,400
6	0.124	5,400
7	0.124	5,400
8	0.124	5,400
9	0.124	5,400
10	0.124	5,400
11	0.124	5,400
12	0.124	5,400
13	0.151	6,558
14	0.151	6,558
15	0.124	5,400
16	0.124	5,400
17	0.124	5,400
18	0.124	5,400
19	0.124	5,400
20	0.124	5,400
21	0.124	5,400
22	0.124	5,400
23	0.124	5,400
24	0.124	5,400
25	0.124	5,400
26	0.151	6,558

GENERAL PLAT NOTES:

1. THIS SUBDIVISION IS WHOLLY CONTAINED WITHIN THE CURRENT CORPORATE LIMITS OF THE CITY OF LEANDER, TEXAS. (INSIDE CITY ONLY) COUNTY
2. THIS SUBDIVISION IS WHOLLY CONTAINED WITH THE EXTRA TERRITORIAL JURISDICTION OF THE CITY OF LEANDER, TEXAS. (ETJ ONLY) COUNTY
3. NO LOT IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO THE CITY OF LEANDER WATER DISTRIBUTION AND WASTEWATER COLLECTION FACILITIES. ART I, SEC 8 (B)
4. A BUILDING PERMIT IS REQUIRED FROM THE CITY OF LEANDER PRIOR TO CONSTRUCTION OF ANY BUILDING OR SITE IMPROVEMENTS ON ANY LOT IN THIS SUBDIVISION. (INSIDE CITY ONLY) ART I, SEC 8 (B)
5. NO BUILDINGS, FENCES, LANDSCAPING OR OTHER STRUCTURES ARE PERMITTED WITHIN DRAINAGE EASEMENTS SHOWN EXCEPT AS APPROVED BY THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT. ART III, SEC 46 (B)
6. PROPERTY OWNER SHALL PROVIDE FOR ACCESS TO DRAINAGE EASEMENTS AS MAY BE NECESSARY AND SHALL NOT PROHIBIT ACCESS BY THE CITY OF LEANDER. ART III, SEC 46 (B)
7. ALL EASEMENTS ON PRIVATE PROPERTY SHALL BE MAINTAINED BY THE PROPERTY OWNER OR HIS OR HER ASSIGNS.
8. IN ADDITION TO THE EASEMENT SHOWN HEREON, A TEN (10') FOOT WIDE PUBLIC UTILITY EASEMENT IS DEDICATED ALONG AND ADJACENT TO ALL RIGHT-OF-WAY AND A TWO AND A HALF (2.5') FOOT WIDE PUBLIC UTILITY EASEMENT IS DEDICATED ALONG ALL SIDE LOT LINES. ART II, SEC 24 (C)(6)(VI)
9. NO PORTION OF THIS TRACT IS WITHIN A FLOOD HAZARD AREA AS SHOWN ON THE FLOOD INSURANCE RATE MAP PANEL # _____ FOR WILLIAMSON CO., EFFECTIVE ___(DATE)___. CODE OF ORDINANCES ART 3.10
10. BUILDING SETBACKS NOT SHOWN HEREON SHALL COMPLY WITH THE MOST CURRENT ZONING ORDINANCE OF THE CITY OF LEANDER. ADDITIONAL RESIDENTIAL GARAGE SETBACKS MAY BE REQUIRED AS LISTED IN THE CURRENT ZONING ORDINANCE. (INSIDE CITY ONLY) ART II, SEC 24 (C)(6)(VII)
11. SIDEWALKS SHALL BE INSTALLED ON BOTH SIDES OF [INSERT STREET NAME(S)] AND THE SUBDIVISION SIDE OF [INSERT STREET NAME(S)]. THOSE SIDEWALKS NOT ABUTTING A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL LOT (INCLUDING SIDEWALKS ALONG STREET FRONTAGES OF LOTS PROPOSED FOR SCHOOLS, CHURCHES, PARK LOTS, DETENTION LOTS, DRAINAGE LOTS, LANDSCAPE LOTS, OR SIMILAR LOTS), SIDEWALKS ON ARTERIAL STREETS TO WHICH ACCESS IS PROHIBITED, SIDEWALKS ON DOUBLE FRONTAGE LOTS ON THE SIDE TO WHICH ACCESS IS PROHIBITED, AND ALL SIDEWALKS ON SAFE SCHOOL ROUTES SHALL BE INSTALLED WHEN THE ADJOINING STREET IS CONSTRUCTED. ART II, SEC 24 (C)(6)(VII)
12. ALL UTILITY LINES MUST BE LOCATED UNDERGROUND. ART III, SEC 47
13. THIS PLAT CONFORMS TO THE PRELIMINARY PLAT APPROVED BY THE PLANNING & ZONING COMMISSION ON _____ (INSERT APPROVAL DATE) ART II, SEC 24 (A) (2)
14. APPROVAL OF THIS FINAL PLAT DOES NOT CONSTITUTE THE APPROVAL OF VARIANCES OR WAIVERS TO ORDINANCE REQUIREMENTS. ART II, SEC 20 (J)

LANDSCAPE NOTE: A SIX-FOOT (6') TALL MASONRY WALL (STONE OR MASONRY PANEL SYSTEM) SHALL BE INSTALLED ON THE RESIDENTIAL REAR LOT LINES ALONG THE LANDSCAPE BUFFER.

STREET TABLE

STREET NAME	LINEAR FEAT
MOO MOO MEADOW	870
PEACH GARDENS	655
YOSHI FALLS	808
DAISY HILLS	655
SHY GUY FALLS	812
KOOPA CAPE ROAD	1,631
BROADE STREET	290

RESERVE AT NORTH FORK
FINAL PLAT
30.434 ACRES
401 HERITAGE GROVE
CHARLES COCHRAN LEAGUE SURVEY, ABSTRACT NO. 134
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

CIVIL ENGINEER:
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SAN ANTONIO, TEXAS 78216
PH: (210) 541-9166
CONTACT: GREG MOSIER, R.P.L.S.

OWNER/DEVELOPER:
LOWER FORTY LLC
5100 W HIGHWAY 290, SUITE 200
AUSTIN TEXAS , 78735

SITE ADDRESS:
401 HERITAGE GROVE RD
LEANDER, TEXAS , 78641

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AS NOTED	AJD	ORB	9/25/2020	069312667	4 OF 5

DWG NAME: K:\SAU_CIVIL\069312667 PULTE LEANDER S 40\CAD\PRELIMINARY\PLANSHEETS\PULTE PLAT.DWG PLOTTED BY OSTERMAN, CHRIS 9/25/2020 9:26 AM LAST SAVED 9/25/2020 9:08 AM

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09-29-2020

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SCALE: AS SHOWN
DESIGNED BY: BG
DRAWN BY: BG
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FINAL PLAT (SHEET 3 OF 4)

RESERVE AT NORTH FORK
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
6 OF 48

Plotted By:Osterman, Chris Date:September 29, 2020 07:41:39am File Path:K:\SAU_Civil\069312667 Pulte Leander S 40\Cad\PlanSheets\C-Final Plat.dwg
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, inc.

STATE OF TEXAS §
COUNTY OF WILLIAMSON §

THAT LOWER FORTY, LLC, OWNER OF THAT CERTAIN 40.659 ACRE TRACT OF LAND DESCRIBED IN DEEDS RECORDED IN DOCUMENT NO. 2016031907 , OF THE OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS; DO HEREBY SUBDIVIDE THE 30.434 ACRES AS SHOWN HEREON AND DEDICATE TO THE PUBLIC USE FOREVER THE STREETS, ALLEYS, EASEMENTS AND ALL OTHER LANDS INTENDED FOR PUBLIC DEDICATION AS SHOWN HEREON. THIS SUBDIVISION IS TO BE KNOWN AS "HERITAGE GROVE". THE OWNERS ACKNOWLEDGE THAT IT IS THE RESPONSIBILITY OF THE OWNERS, NOT THE CITY OF LEANDER, TO ASSURE COMPLIANCE WITH THE PROVISIONS OF ALL APPLICABLE STATE, FEDERAL, AND LOCAL LAWS AND REGULATIONS RELATING TO THE ENVIRONMENT, INCLUDING BUT NOT LIMITED TO THE ENDANGERED SPECIES ACT, STATE AQUIFER REGULATIONS, AND MUNICIPAL WATERSHED ORDINANCES.

LOWER FORTY, LLC,

BY: _____

BY: _____

NAME: _____
DATE

TITLE: _____

STATE OF TEXAS §
COUNTY OF WILLIAMSON § KNOW ALL MEN BY THESE PRESENTS

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED XXXXXXXXXXXXXXXXXXXXXXXXXXXX, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT THEY EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATION THEREIN EXPRESSED, IN THE CAPACITY THEREIN STATED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS___DAY OF_____, 2020.

_____
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

PRINTED NAME: _____

MY COMMISSION EXPIRES ON:

CITY OF LEANDER CERTIFICATION:

APPROVED THIS THE ____ DAY OF ____, 20__, A.D. AT A PUBLIC MEETING OF THE PLANNING AND ZONING COMMISSION OF THE CITY OF LEANDER, TEXAS AND AUTHORIZED TO BE FILED FOR RECORD BY THE COUNTY CLERK OF WILLIAMSON COUNTY.

_____
J. JEFF SEILER, CHAIRMAN
PLANNING AND ZONING COMMISSION
CITY OF LEANDER, TEXAS

ATTEST: _____
ELLEN PIZALATE, SECRETARY
PLANNING AND ZONING COMMISSION
CITY OF LEANDER, TEXAS

I, THE UNDERSIGNED, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN THIS PLAT.

ENGINEERED BY: _____
BENJAMIN L. GREEN, P.E.
REGISTERED PROFESSIONAL ENGINEER No. 132190
KIMLEY-HORN AND ASSOCIATES, INC.
2600 VIA FORTUNA, TERRACE 1, SUITE 300
AUSTIN, TX 78746

THIS TRACT IS NOT WITHIN AN IDENTIFIED SPECIAL FLOOD HAZARD AREA INUNDATED BY 100-YEAR FLOOD AS IDENTIFIED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) FOR WILLIAMSON COUNTY, TEXAS, MAP48491C0455E DATED SEPTEMBER 26, 2008

_____ _____
BENJAMIN L. GREEN, P.E. DATE
REGISTERED PROFESSIONAL ENGINEER No. 132190
KIMLEY-HORN AND ASSOCIATES, INC.
2600 VIA FORTUNA, TERRACE 1, SUITE 300
AUSTIN, TX 78746

STATE OF TEXAS §
COUNTY OF WILLIAMSON § KNOW ALL MEN BY THESE PRESENTS

I, NANCY RISTER, CLERK OF THE COUNTY COURT OF SAID COUNTY, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT IN WRITING, WITH ITS CERTIFICATE WAS FILED FOR RECORD IN MY OFFICE ON THE DAY___OF _____, 2014 A.D., AT __ O'CLOCK, _.M.,

AND DULY RECORDED THIS THE DAY___OF _____, 2014 A.D., AT __ O'CLOCK _ M.,

IN THE PLAT RECORDS OF SAID COUNTY, IN DOCUMENT NUMBER _____

TO CERTIFY WHICH, WITNESS MY HAND AND SEAL AT THE COUNTY COURT OF SAID COUNTY, AT MY OFFICE IN GEORGETOWN, TEXAS, THE DATE LAST SHOWN ABOVE WRITTEN.

_____
NANCY RISTER, CLERK, COUNTY COURT
OF WILLIAMSON COUNTY, TEXAS

BY: _____ DEPUTY

SURVEYOR'S CERTIFICATION:

THAT I, JOHN G. MOSIER, A REGISTERED PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT I PREPARED THIS PLAT FROM AN ACTUAL AND ACCURATE ON-THE-GROUND SURVEY OF THE LAND AND THAT THE CORNER MONUMENTS SHOWN THEREON WERE PROPERLY PLACED UNDER MY PERSONAL SUPERVISION, IN ACCORDANCE WITH THE CITY OF LEANDER SUBDIVISION ORDINANCE.

WITNESS MY HAND THIS THE ____ DAY OF _____, 20__.

_____
JOHN G. MOSIER
REGISTERED PROFESSIONAL
LAND SURVEYOR NO. 6330
601 NW LOOP 410, SUITE 350
SAN ANTONIO, TEXAS 78216
PH. 210-541-9166
greg.mosier@kimley-horn.com

CIVIL ENGINEER:
KIMLEY-HORN AND ASSOCIATES, INC.
2600 VIA FORTUNA, SUITE 300
AUSTIN, TEXAS 78746
TBPE FIRM REGISTRATION NO. F-928
PH: (512) 646-2243 FAX: (512) 418-1791
CONTACT: BEN GREEN P.E.

SURVEYOR:
KIMLEY-HORN AND ASSOCIATES, INC.
LAND SURVEYOR NO. 6330
601 NW LOOP 410, SUITE 350
SAN ANTONIO, TEXAS 78216
PH: (210) 541-9166
CONTACT: GREG MOSIER, R.P.L.S.

OWNER/DEVELOPER:
LOWER FORTY LLC
5100 W HIGHWAY 290, SUITE 200
AUSTIN TEXAS , 78735

SITE ADDRESS:
401 HERITAGE GROVE RD
LEANDER, TEXAS , 78641

RESERVE AT NORTH FORK
FINAL PLAT
30.434 ACRES
401 HERITAGE GROVE
CHARLES COCHRAN LEAGUE SURVEY, ABSTRACT NO. 134
CITY OF LEANDER, WILLIAMSON COUNTY, TEXAS

Kimley»Horn
2600 Via Fortuna, Suite 300
Austin, Texas 78746
Tel. No. (512) 646-2237
www.kimley-horn.com

Scale	Drawn by	Checked by	Date	Project No.	Sheet No.
AS NOTED	AJD	ORB	9/25/2020	069312667	5 OF 5

DWG NAME: K:\SAU_CIVIL\069312667 PULTE LEANDER S 40\CAD\PRELIMINARY\PLANSHEETS\PULTE PLAT.DWG PLOTTED BY OSTERMAN, CHRIS 9/25/2020 9:28 AM LAST SAVED 9/25/2020 9:08 AM

BENCHMARKS

BM #101, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT

- ELEV.=1002.370' (NAVD '88)

BM #102, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 40.57 ACRE TRACT BELONGING TO UPPER FORTY, LLC

- ELEV.=995.150' (NAVD '88)

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, AVALLON IV, SUITE 300, AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

KHA PROJECT 069312667
DATE SEPTEMBER 2020
SCALE: AS SHOWN
DESIGNED BY: BG
DRAWN BY: ORB
CHECKED BY: BG

FINAL PLAT
(SHEET 4 OF 4)

RESERVE AT NORTH FORK
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
7 OF 48

CALLED 31.570 ACRES
DOC# 2018066677 OPRWC

EXISTING 8" WATER LINE

CALLED 44.385 ACRE
TRACT OF LAND
VOL. 2018, PG. 891 OPRWC

CITY OF LEANDER
3 ½ MILE ETJ

1/2" IRF

HERITAGE GROVE ROAD
(PUBLIC R.O.W., WIDTH VARIES)

95'

55'

70' ROW

1/2" IRSC

POB
1/2" IRSC

80'

EXISTING 10"
FORCEMAIN

LOT 1, BLOCK A
HERITAGE GROVE
COMMERCIAL
DOC# 2018106375
OPRWC

29.984 ACRES
1,306,092 SQ. FT.
CALLED 40.692 ACRES
LOWER FORTY, LLC
DOC# 2016031907 OPRWC
(PORTION OF)

MATCH LINE SEE SHEET 9

1/2" IRF

81'

1/2" IRSC

CALLED 2.543 ACRES
JSL COMMERCIAL
INVESTMENTS, LLC
DOC# 2015001313 OPRWC

80'

CALLED 19.00 ACRES
HILL COUNTRY BIBLE CHURCH LEANDER
DOC# 2013018966 OPRWC

1/2" IRFC

1/2" IRFC

N
W
E
S

0 60' 120'
GRAPHIC SCALE 60'

UTILITY LEGEND

- PROPERTY LINE
- 632 — EXISTING CONTOUR
- OHP — EXISTING OVERHEAD POWER LINE
- W — EXISTING WATER LINE
- FM — EXISTING FORCE MAIN
- WW — EXISTING WASTEWATER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTEWATER MANHOLE

BENCHMARKS

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STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

KHA PROJECT 069312667		
DATE	SEPTEMBER 2020	
SCALE:	AS SHOWN	
DESIGNED BY:		BG
DRAWN BY:		ORB
CHECKED BY:		BG

EXISTING CONDITIONS & DEMO PLAN (SHEET 1 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
8 OF 48

CALLED 40.57 ACRES
UPPER FORY, LLC
DOC# 2016031908 OPRWC

1/2" IRFC

29.79 ACRE SURVEY

HERITAGE GROVE ROAD
(PUBLIC R.O.W., WIDTH VARIES)

65'

1/2" IRF

1/2" IRF

EXISTING 12" WATER LINE

BROADE STREET
(35' WIDE PUBLIC R.O.W.)

CALLED 10 ACRES
OSBAHR MARCIA FAMILY
TRUST
VOL.1382 PG.394 OPRWC
(NO DESCRIPTION FOUND)

1/2" IRF

1/2" IRF

35'

1/2" IRF

LOT 1, BLOCK A
HERITAGE GROVE
COMMERCIAL
DOC# 2018106375
OPRWC

MATCH LINE SEE SHEET 8

10.675 ACRES
464,992 SQ. FT.
CALLED 40.692 ACRES
LOWER FORTY, LLC
DOC# 2016031907 OPRWC
(REMAINDER)

120'

U.S. HWY 183
(120' WIDE PUBLIC R.O.W.)

120'

1/2" IRSC

ELECTRIC/TELEPHONE EASEMENT
VOL.245 PG.140 OPRWC
(NO WIDTH DEFINED)

1/2" IRSC

1/2" IRF

EXISTING 8" WASTEWATER LINE

1/2" IRF

1/2" IRFC

120'

CALLED 1.48 ACRES
THOMPSON
JEANNE ARNOLD ETAL
VOL. 2000 PG. 053933
OPRWC

WLH COMMUNITIES
TEXAS LLC
DOC# 2019041936

1/2" IRSC

CALLED 3.00 ACRES
GREG BRULL
DOC# 2006045358 OPRWC

N
W
E
S

0 60' 120'
GRAPHIC SCALE 60'

UTILITY LEGEND

	PROPERTY LINE
632	EXISTING CONTOUR
OHP	EXISTING OVERHEAD POWER LINE
W	EXISTING WATER LINE
FM	EXISTING FORCE MAIN
WW	EXISTING WASTEWATER LINE
	EXISTING POWER POLE
	EXISTING FIRE HYDRANT
	EXISTING WATER METER
	EXISTING WASTEWATER MANHOLE

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- ELEV.=995.150' (NAVD '88)

No.	REVISIONS	DATE	BY

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109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

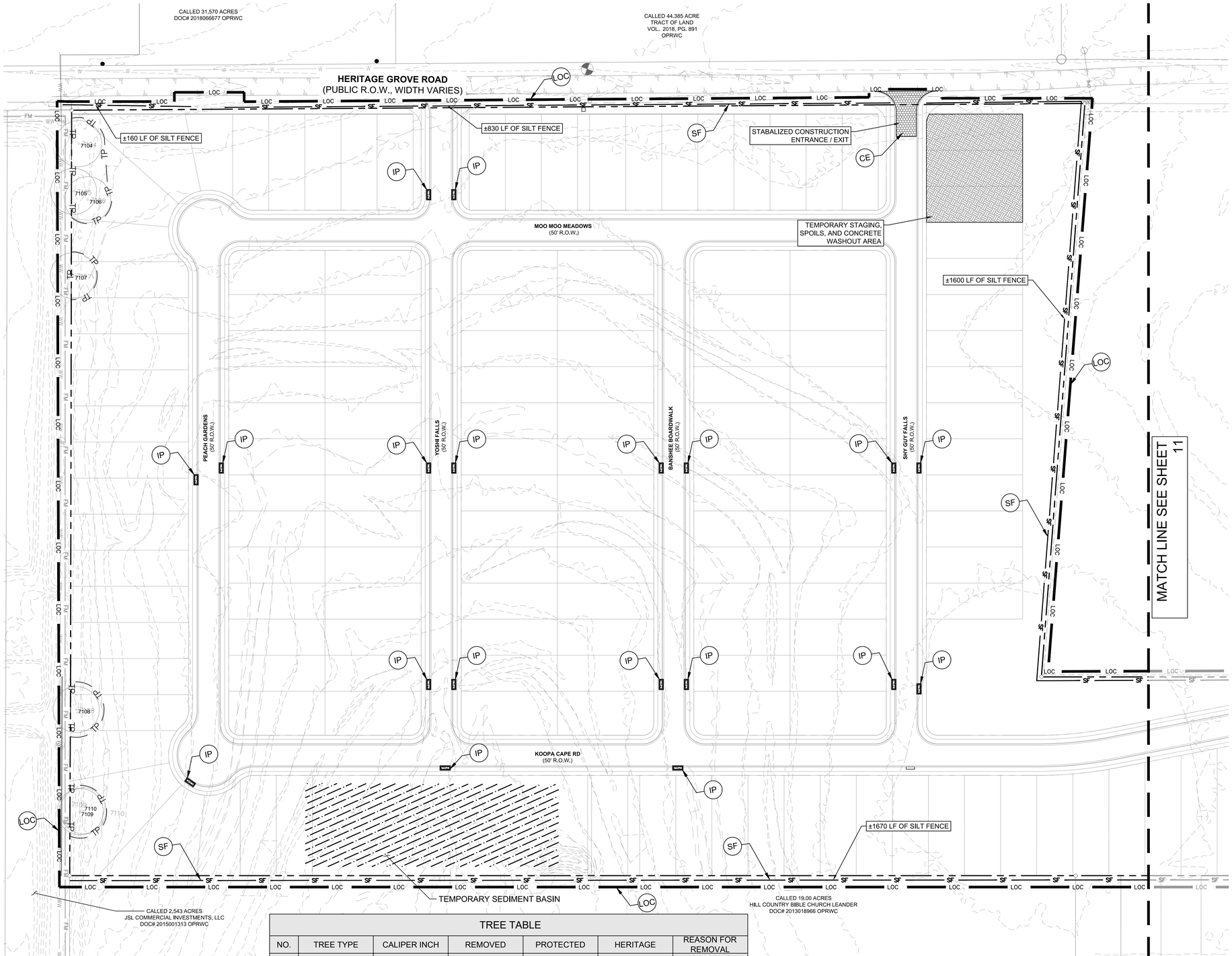
KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

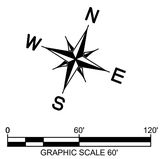
EXISTING CONDITIONS & DEMO PLAN (SHEET 2 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
9 OF 48





EROSION CONTROL LEGEND

- PROPERTY LINE
- 632 PROPOSED CONTOUR
- 632 EXISTING CONTOUR
- (SF) SF SILT FENCE
- (CE) STABALIZED CONSTRUCTION ENTRANCE/EXIT
- TEMPORARY STAGING, SPOILS, & CONCRETE WASHOUT AREA
- (IP) INLET PROTECTION
- (RB) ROCK BERM
- (LOC) LOC LIMITS OF CONSTRUCTION
- TREE TO REMAIN
- TP TREE PROTECTION

NOTES

1. CONTRACTOR IS SOLELY RESPONSIBLE FOR IMPLEMENTATION, MAINTENANCE, AND EFFECTIVENESS OF ALL SWPPP CONTROLS - CONTROLS SHOWN ON THIS SITE MAP ARE SUGGESTED CONTROLS ONLY.
2. CONTRACTOR SHALL RECORD INSTALLATION, MAINTENANCE OR MODIFICATION, AND REMOVAL DATES FOR EACH BMP EMPLOYED (WHETHER CALLED OUT ON ORIGINAL SWPPP OR NOT) DIRECTLY ON THE SITE MAP.
3. THE ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO ADD AND/OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE TO KEEP PROJECT IN COMPLIANCE WITH THE CITY OF BUDA RULES AND REGULATIONS
4. TEMPORARY AND PERMANENT STABILIZATION PRACTICES AND BMP'S SHALL BE INSTALLED AT THE EARLIEST POSSIBLE TIME DURING THE CONSTRUCTION SEQUENCE. AS AN EXAMPLE, PERIMETER SILT FENCE SHALL BE INSTALLED BEFORE COMMENCEMENT OF ANY GRADING ACTIVITIES. OTHER BMP'S SHALL BE INSTALLED AS SOON AS PRACTICABLE AND SHALL BE MAINTAINED UNTIL FINAL SITE STABILIZATION IS ATTAINED. CONTRACTOR SHALL ALSO REFERENCE CIVIL AND LANDSCAPE PLANS SINCE PERMANENT STABILIZATION IS PROVIDED BY LANDSCAPING, THE BUILDING(S), AND SITE PAVING.
5. BMP'S HAVE BEEN LOCATED AS INDICATED ON THIS PLAN IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRACTICES IN ORDER TO MINIMIZE SEDIMENT TRANSFER. FOR EXAMPLE: SILT FENCES LOCATED AT TOE OF SLOPE AND INLET PROTECTION FOR INLETS RECEIVING SEDIMENT FROM SITE RUN-OFF.
6. ADDITIONAL EROSION AND SEDIMENTATION CONTROLS MAY BE REQUIRED BY THE CITY DURING CONSTRUCTION.
7. REFERENCE EROSION CONTROL DETAILS SHEET 45.
8. IF DISTURBED AREA IS NOT TO BE WORKED ON FOR MORE THAN 14 DAYS, DISTURBED AREA NEEDS TO BE STABILIZED BY REVEGETATION, MULCH, TARP OR REVEGETATION MATTING. THE CONTRACTOR WILL CLEAN UP SPOILS THAT MIGRATE ONTO THE ROADS A MINIMUM OF ONCE DAILY.
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EROSION CONTROL MEASURES SEQUENCING

BEFORE ANY SITE GRADING ACTIVITIES:
1. INSTALL PERIMETER SILT FENCE
2. INSTALL STORM DRAIN INLET PROTECTION
3. CONSTRUCTION STABILIZED CONSTRUCTION ENTRANCE
4. CONSTRUCT SEDIMENT BASINS

SITE GRADING
1. BEGIN SITE CLEARING AND GRUBBING OPERATIONS
2. BEGIN OVERALL SITE GRADING
3. ESTABLISH TOP SOIL STOCKPILE
4. INSTALL SILT FENCE AROUND STOCKPILES
5. DISTURBED AREAS WHERE CONSTRUCTION WILL CEASE FOR MORE THAN 14 DAYS SHALL BE STABILIZED WITH EROSION CONTROLS

TREE TABLE

NO.	TREE TYPE	CALIPER INCH	REMOVED	PROTECTED	HERITAGE	REASON FOR REMOVAL
7104	BOIS D'ARC	17"		17"		
7105	HACKBERRY	12"		12"		
7106	9" CEDAR	9"		9"		
7107	8" CEDAR	8"		8"		
7108	12" BOIS D'ARC	12"		12"		
7109	8" MISC. TREE	8"		8"		
7110	9" CEDAR	9"		9"		

TREE REMOVE/REMAIN SUMMARY

TOTAL NUMBER OF TREES	REMOVED	PROTECTED	PERCENTAGE REMOVED	PERCENTAGE PROTECTED
7	0	7	0%	100%

BENCHMARKS

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No.	REVISIONS	DATE	BY

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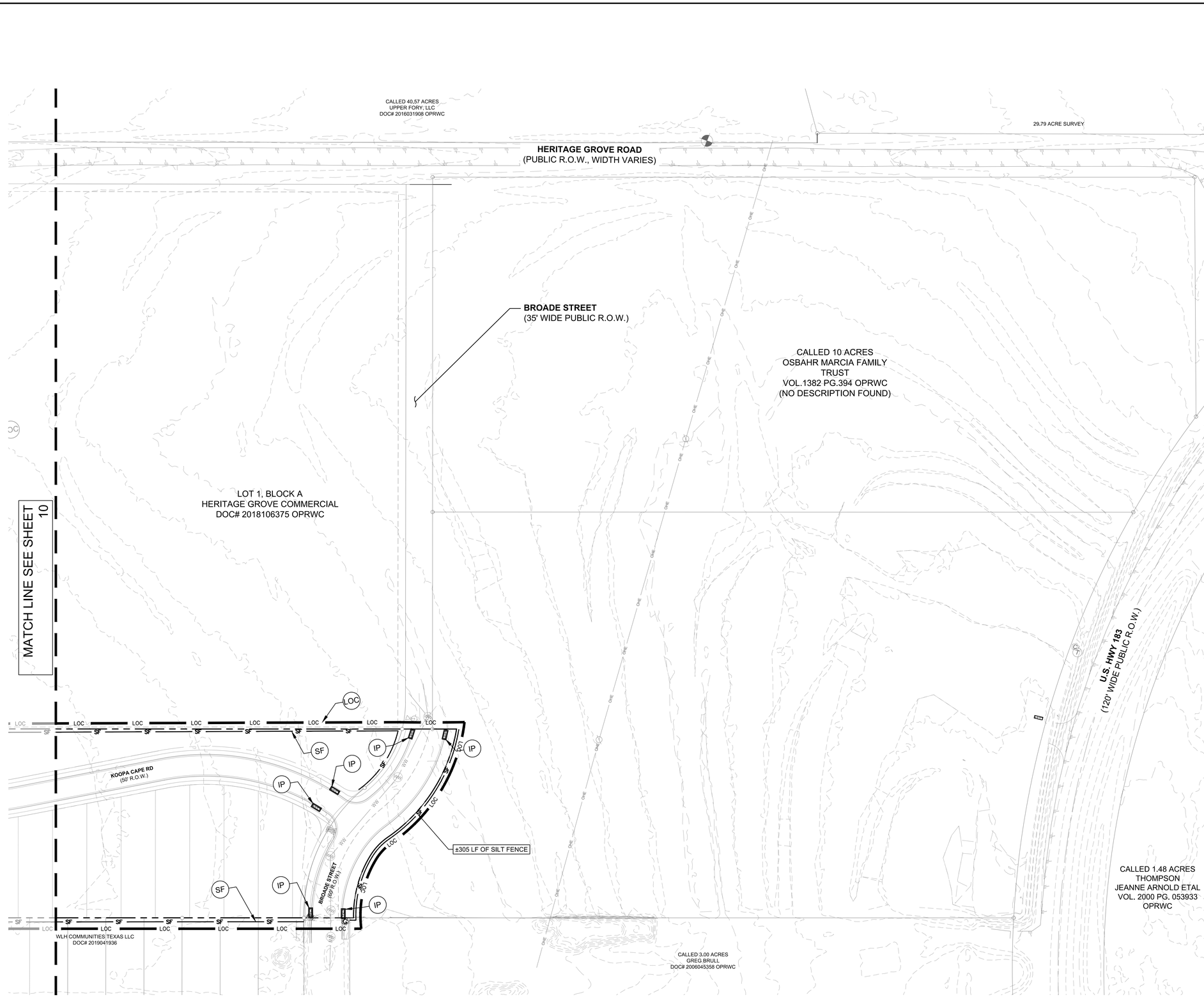
EROSION CONTROL PLAN (SHEET 1 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
10 OF 48



EROSION CONTROL LEGEND

- PROPERTY LINE
- 632 — PROPOSED CONTOUR
- 632 — EXISTING CONTOUR
- (SF) — SF — SILT FENCE
- (CE) — STABALIZED CONSTRUCTION ENTRANCE/EXIT
- TEMPORARY STAGING, SPOILS, & CONCRETE WASHOUT AREA
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EROSION CONTROL MEASURES SEQUENCING

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1. INSTALL PERIMETER SILT FENCE
2. INSTALL STORM DRAIN INLET PROTECTION
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1. BEGIN SITE CLEARING AND GRUBBING OPERATIONS
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- ELEV.=1002.370' (NAVD '88)

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09-29-2020

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DATE SEPTEMBER 2020
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EROSION CONTROL PLAN (SHEET 2 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
11 OF 48

CALLED 31,570 ACRES
DOC# 2018066677 OPRWC

CALLED 44.385 ACRE
TRACT OF LAND
VOL., 2018, PG. 891
OPRWC

CITY OF LEANDER
3 ½ MILE ETJ

CITY OF LEANDER

HERITAGE GROVE ROAD
(PUBLIC R.O.W., WIDTH VARIES)

MOO MOO MEADOWS
(50' R.O.W.)

PEACH GARDENS
(50' R.O.W.)

YOSHI FALLS
(50' R.O.W.)

BANSHEE BOARDWALK
(50' R.O.W.)

SHY GUY FALLS
(50' R.O.W.)

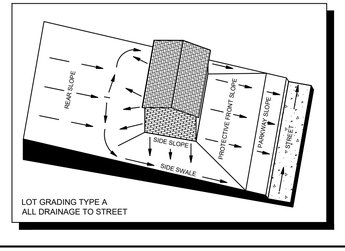
KOOPA CAPE RD
(50' R.O.W.)

MATCH LINE SEE SHEET 13

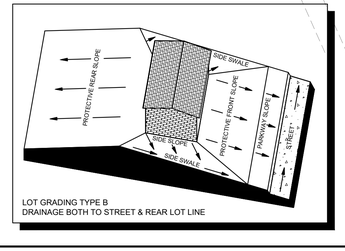
CALLED 2.543 ACRES
JSL COMMERCIAL INVESTMENTS, LLC
DOC# 2015001313 OPRWC

CALLED 19.00 ACRES
HILL COUNTRY BIBLE CHURCH LEANDER
DOC# 2013018966 OPRWC

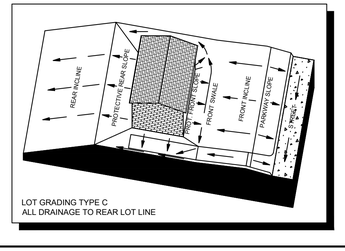
WLH COMMUNITIES TEXAS LLC
DOC# 2019041936



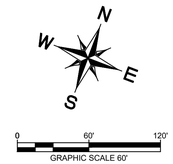
LOT GRADING TYPE A
ALL DRAINAGE TO STREET



LOT GRADING TYPE B
DRAINAGE BOTH TO STREET & REAR LOT LINE



LOT GRADING TYPE C
ALL DRAINAGE TO REAR LOT LINE



LEGEND

- PROPERTY LINE
- 555 PROPOSED CONTOUR
- 555 EXISTING CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED SWALE
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- EXISTING TREE TO REMAIN

GRADING GENERAL NOTES

1. CONTRACTOR SHALL CUT 3' BEHIND BACK OF CURB TO SUBGRADE ELEVATION.
2. ALL PERIMETER SLOPES TO NATURAL GROUND ARE TO BE 4:1 MAX, UNLESS OTHERWISE NOTED.
3. ALL SIDEWALKS SHALL NOT EXCEED A MAXIMUM 2% CROSS SLOPE & A 5% LONGITUDINAL SLOPE.
7. CONTRACTOR TO MATCH EXISTING GRADES AT ALL PHASE BOUNDARIES
8. GRADES PROVIDED ARE TO TOP OF PAVEMENT AND/OR TOP OF GROUND. CONTRACTOR TO MASS GRADE TO TOP OF PAVEMENT SUBGRADE FOR FUTURE ROADWAYS, AND TO TOP OF FINISHED PAD, AND TO TOP OF GROUND FOR LOTS/LANDSCAPE AREAS.
9. REFER TO GEOTECH REPORT BY _____ REPORT NO. _____.
10. ALL PROPOSED ELEVATIONS (SPOT GRADES AND CONTOURS) ARE TO FUTURE TOP OF GROUND AND PAVEMENT. CONTRACTOR TO CONSTRUCT ROADWAYS AND R.O.W. TO FINAL TOP OF PAVEMENT, CURB, AND GROUND ELEVATIONS PER THESE PLANS. CONTRACTOR TO VERIFY EXISTING TOP OF SUBGRADE ELEVATIONS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER IMMEDIATELY IF ANY DISCREPANCIES.
11. ALL REQUIRED RETAINING WALLS TO BE DESIGNED & CONSTRUCTED BY THE HOMEBUILDER.
12. HOMEBUILDER MUST MAINTAIN LOT GRADING CRITERIA AS FOLLOWS:
    - ~ FRONT YARD: 1.1% - 6% (MAX DRIVEWAY SLOPE OF 10%)
    - ~ MINIMUM LOT SLOPE: 1.1% FOR A & C LOTS, 1.5% FOR B LOTS
    - ~ MAX BACKYARD SLOPE: 10% - 15%

BENCHMARKS

BM #101: X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT

- ELEV.=1002.370' (NAVD '88)

BM #102: X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 40.57 ACRE TRACT BELONGING TO UPPER FORTY, LLC

- ELEV.=995.150' (NAVD '88)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2017 KIMLEY-HORN AND ASSOCIATES, INC.
10814 JOLLYVILLE ROAD, AVALLON IV, SUITE 300, AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

KHA PROJECT 069312667	DATE	SEPTEMBER 2020
SCALE: AS SHOWN	DESIGNED BY:	BG
	DRAWN BY:	ORB
	CHECKED BY:	BG

GRADING PLAN (SHEET 1 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
12 OF 48

CALLED 40.57 ACRES
UPPER FORY, LLC
DOC# 2016031908 OPRWC

29.79 ACRE SURVEY

HERITAGE GROVE ROAD
(PUBLIC R.O.W., WIDTH VARIES)

BROADE STREET
(35' WIDE PUBLIC R.O.W.)

CALLED 10 ACRES
OSBAHR MARCIA FAMILY TRUST
VOL.1382 PG.394 OPRWC
(NO DESCRIPTION FOUND)

LOT 1, BLOCK A
HERITAGE GROVE COMMERCIAL
DOC# 2018106375 OPRWC

MATCH LINE SEE SHEET 12

KOOPA CAPE RD
(50' R.O.W.)

BROADE STREET
(60' R.O.W.)

WLH COMMUNITIES TEXAS LLC
DOC# 2019041936

CALLED 3.00 ACRES
GREG BRULL
DOC# 2006045358 OPRWC

U.S. HWY 183
(120' WIDE PUBLIC R.O.W.)

N
W E
S

0 60' 120'
GRAPHIC SCALE 60'

LEGEND

- PROPERTY LINE
- 555 PROPOSED CONTOUR
- 555 EXISTING CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED SWALE
- LOT DRAINAGE FLOW DIRECTION
- STREET DRAINAGE FLOW DIRECTION
- EXISTING TREE TO REMAIN

GRADING GENERAL NOTES

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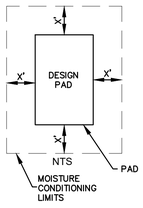
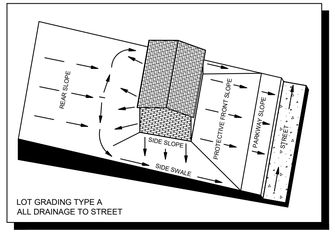


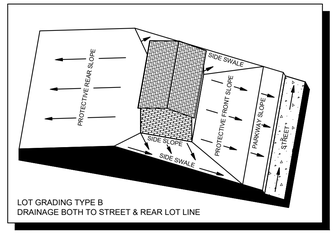
EXCAVATION NOTE:
CONTRACTOR TO MOISTURE CONDITION 5' BEYOND PAD PER GEOTECH RECOMMENDATIONS PSI PROJECT NO. _____

NTS

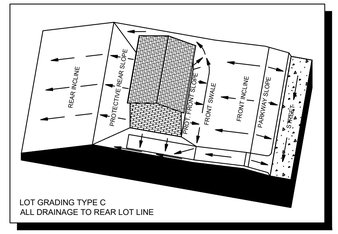
CONTRACTOR TO WRAP PADS WITH PLASTIC SHEETING AS NOTED IN SUPPLEMENTAL RECOMMENDATIONS PROVIDED BY PSI REPORT NO. _____



LOT GRADING TYPE A
ALL DRAINAGE TO STREET



LOT GRADING TYPE B
DRAINAGE BOTH TO STREET & REAR LOT LINE



LOT GRADING TYPE C
ALL DRAINAGE TO REAR LOT LINE

BENCHMARKS

BM #101, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT

- ELEV.= 1002.370' (NAVD '88)

BM #102, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 40.57 ACRE TRACT BELONGING TO UPPER FORTY, LLC

- ELEV.=995.150' (NAVD '88)

No.	REVISIONS	DATE	BY

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STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

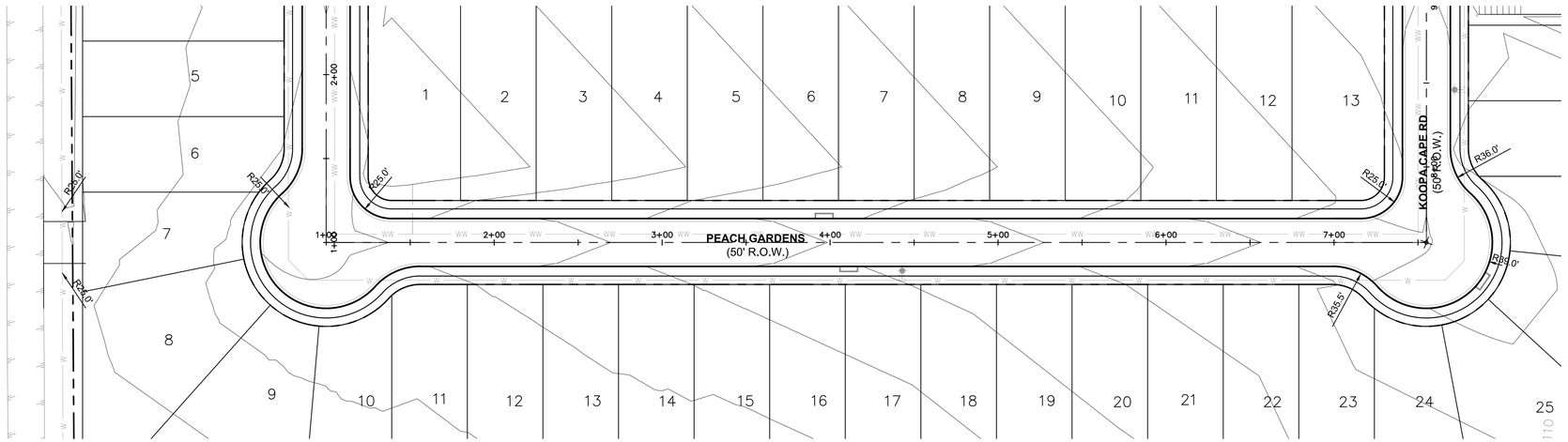
KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE:	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

GRADING PLAN (SHEET 2 OF 2)

RESERVE AT NORTH FORK

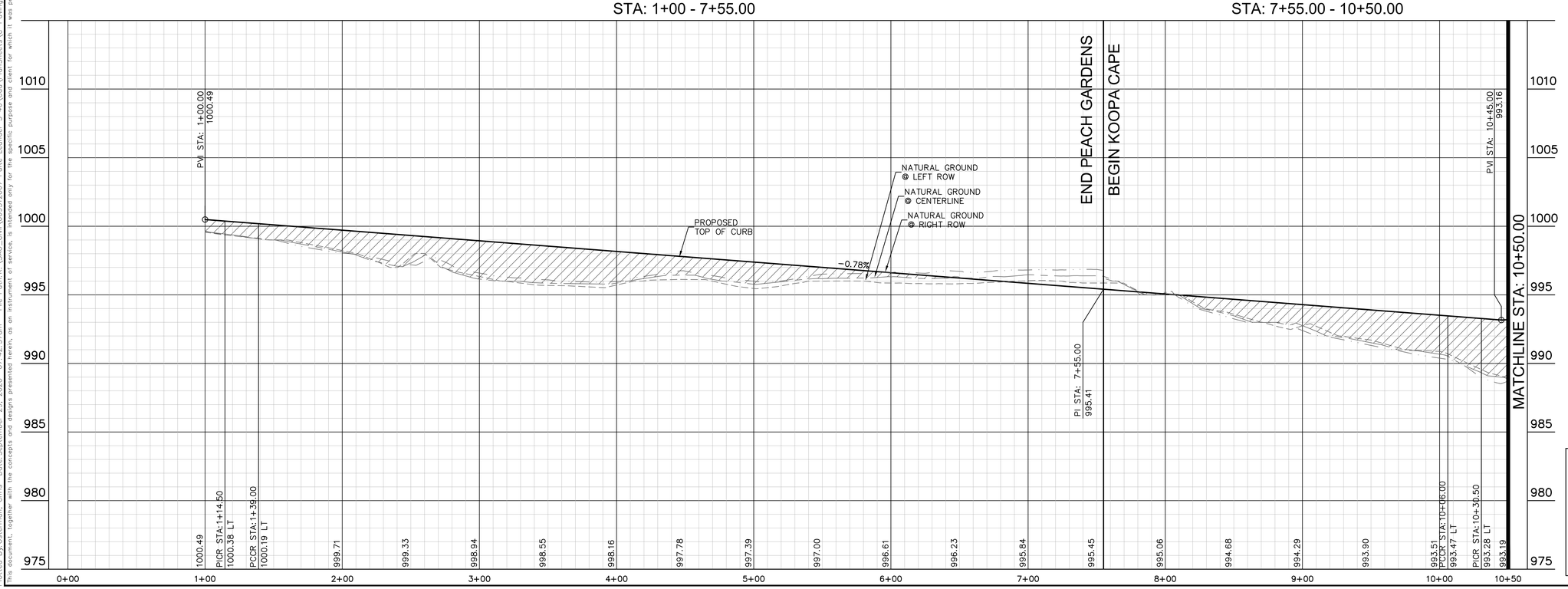
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
13 OF 48



0 40' 80'

GRAPHIC SCALE 40'



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

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DRAWN BY:	ORB
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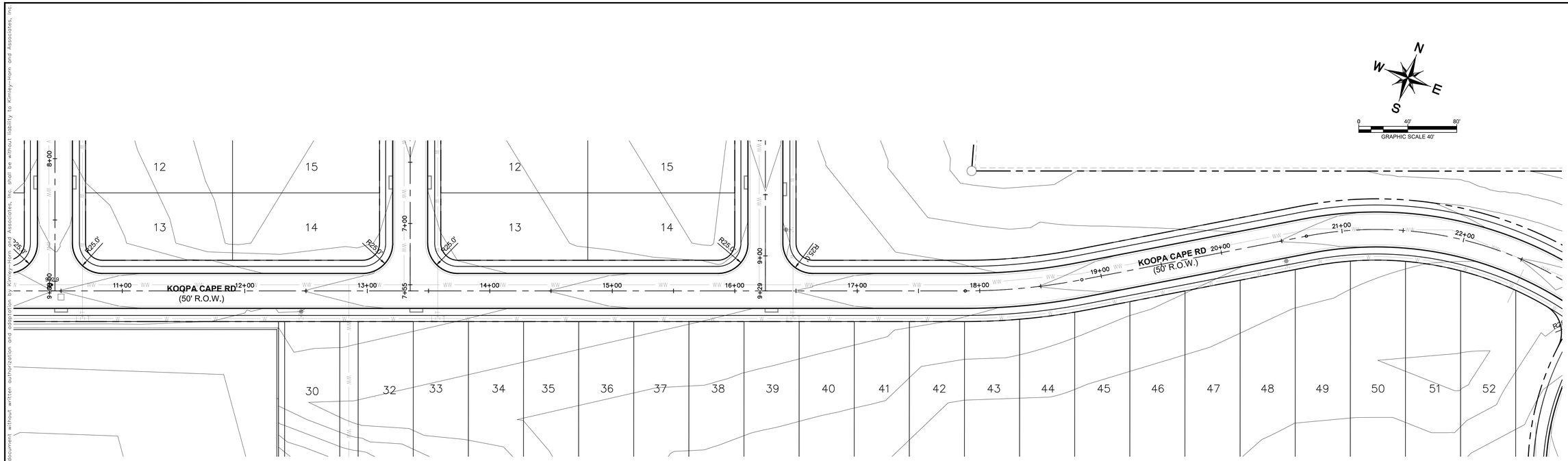
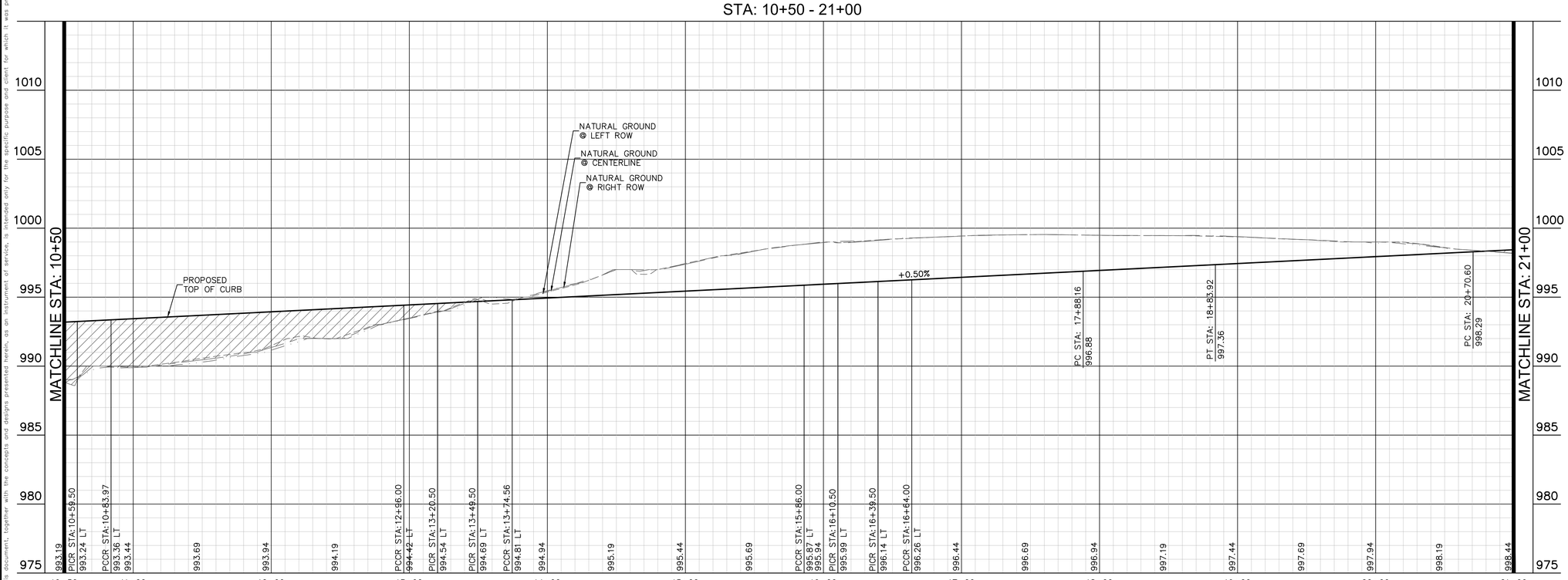
PAVING P&P - PEACH GARDENS

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
14 OF 48





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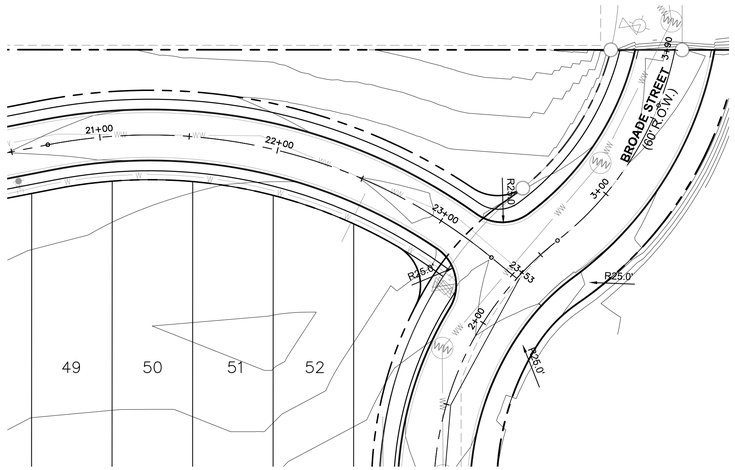
CHECKED BY:	BG

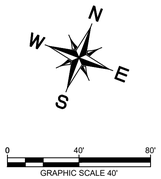
PAVING P&P - KOOPA CAPE RD (SHEET 1 OF 2)

RESERVE AT NORTH FORK

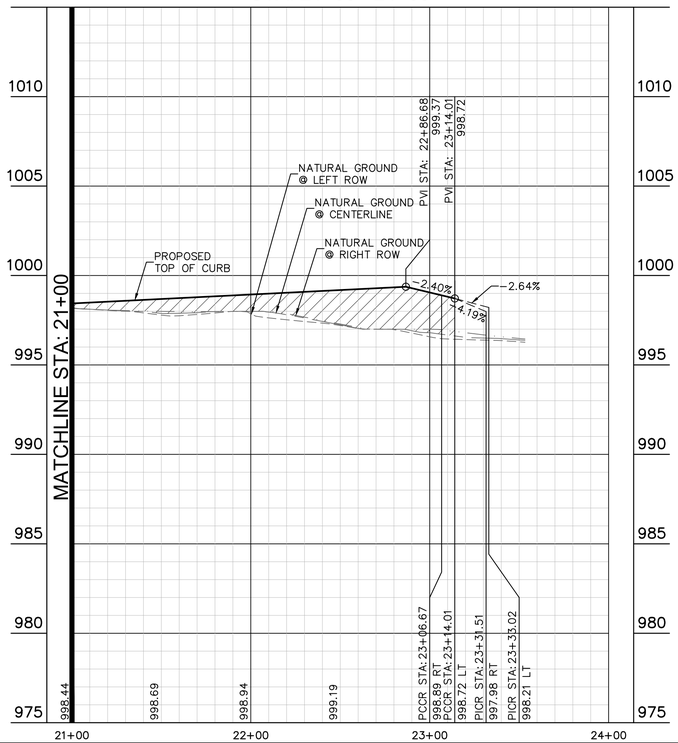
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
15 OF 48





KOOPA CAPE
STA: 21+00 - 24+00



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

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KHA PROJECT	069312667
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DESIGNED BY:	BG
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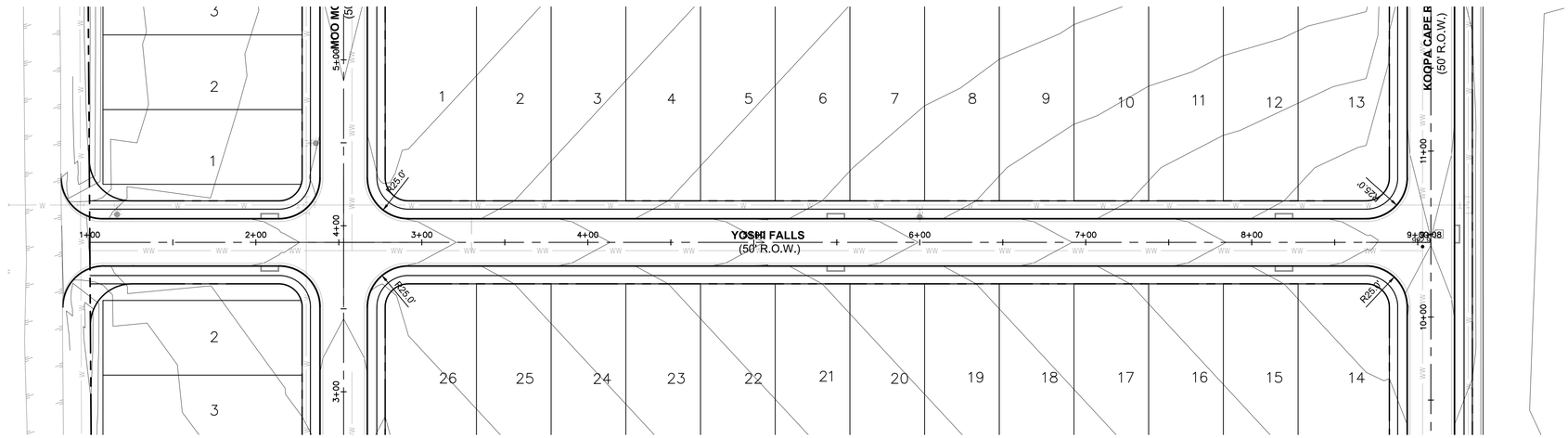
PAVING P&P - KOOPA CAPE RD (SHEET 2 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

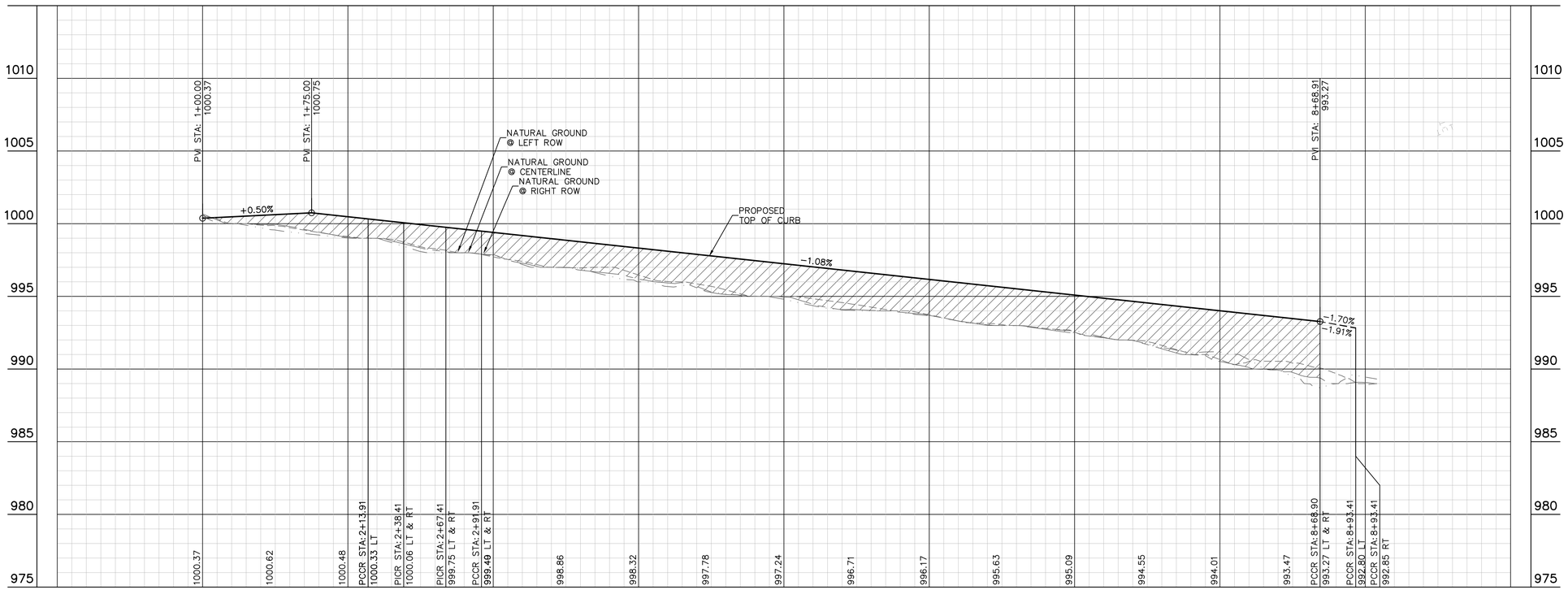
SHEET NUMBER
16 OF 48



0 40' 80'

GRAPHIC SCALE 40'

YOSHI FALLS
STA: 1+00 - 7+42.50



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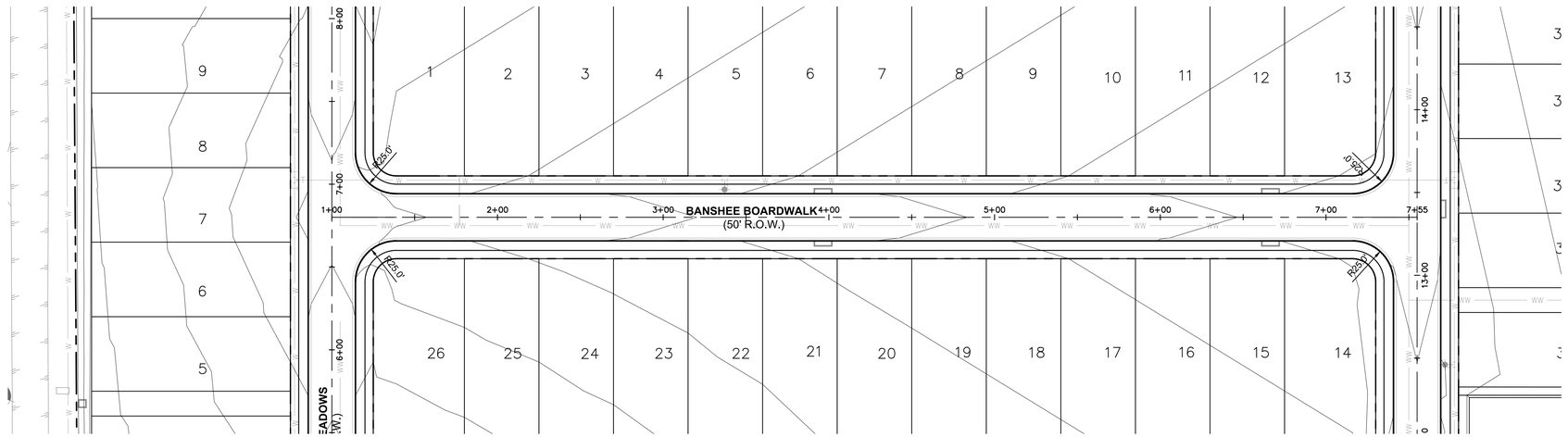
PAVING P&P - YOSHI FALLS

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

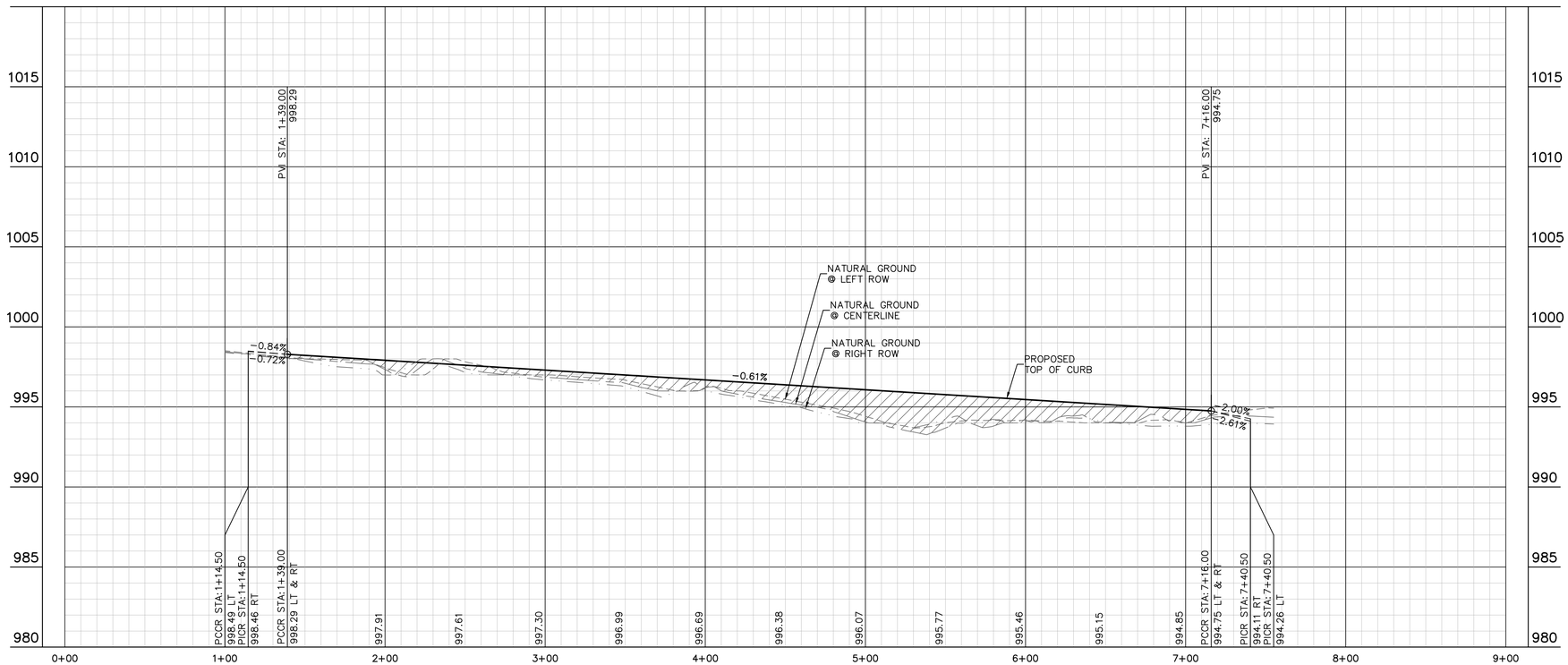
SHEET NUMBER
17 OF 48



0 40' 80'

GRAPHIC SCALE 40'

BANSHEE BOARDWALK
STA: 1+00 - 7+42.50



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STATE OF TEXAS
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09-29-2020

KHA PROJECT	069312667
DATE	SEPTEMBER 2020
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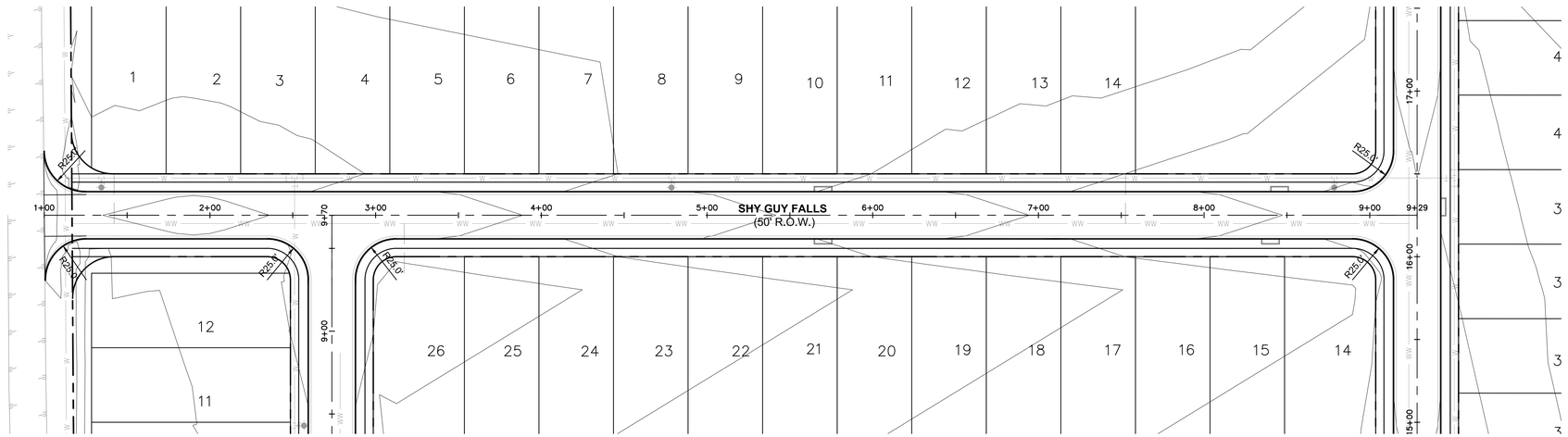
DRAWN BY:	ORB
CHECKED BY:	BG

PAVING P&P - DELFINO SQUARE

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

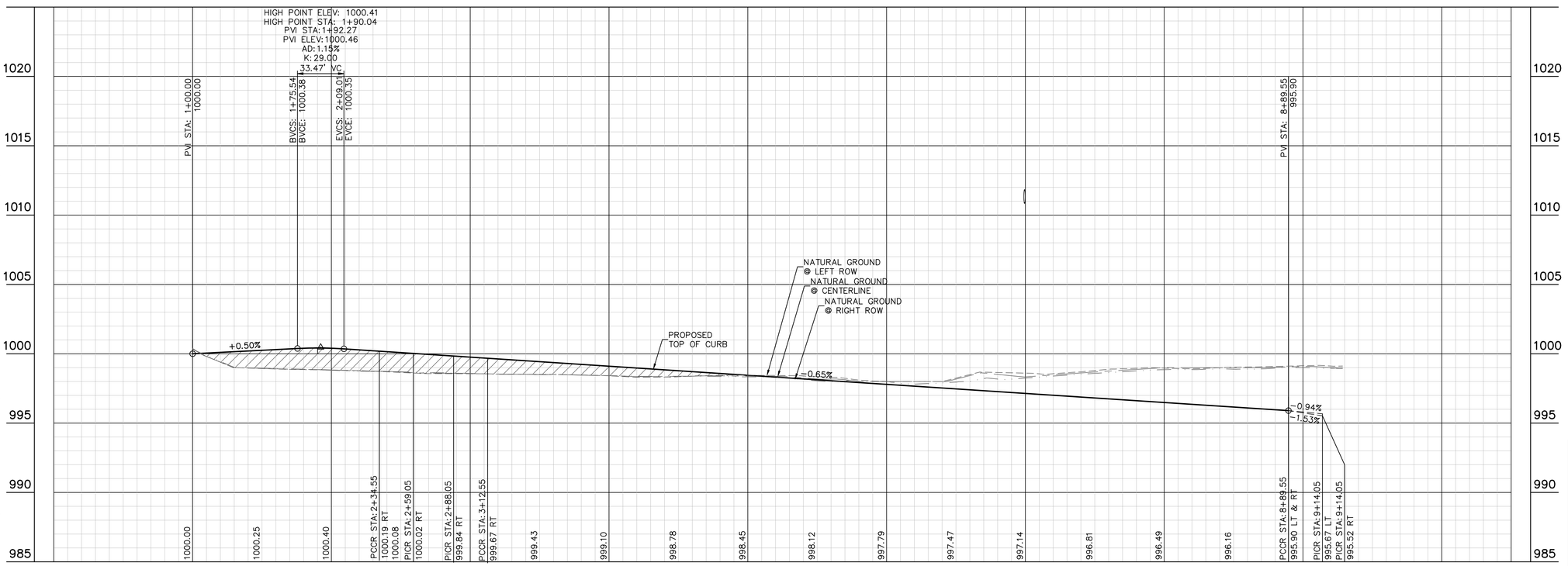
SHEET NUMBER
18 OF 48



0 40' 80'

GRAPHIC SCALE 40'

SHY GUY FALLS
STA: 1+00 - 9+16.05



PROFILE SCALE
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1" = 4' VERTICAL

BENCHMARKS

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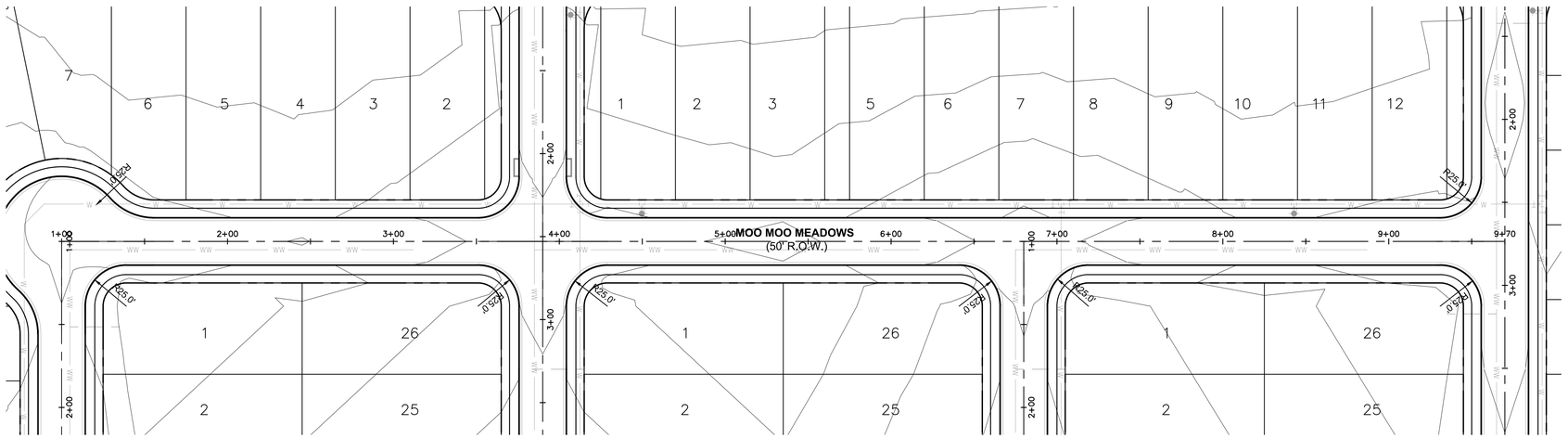
09-29-2020

KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

PAVING P&P -
SHY GUY FALLS

RESERVE AT NORTH FORK
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

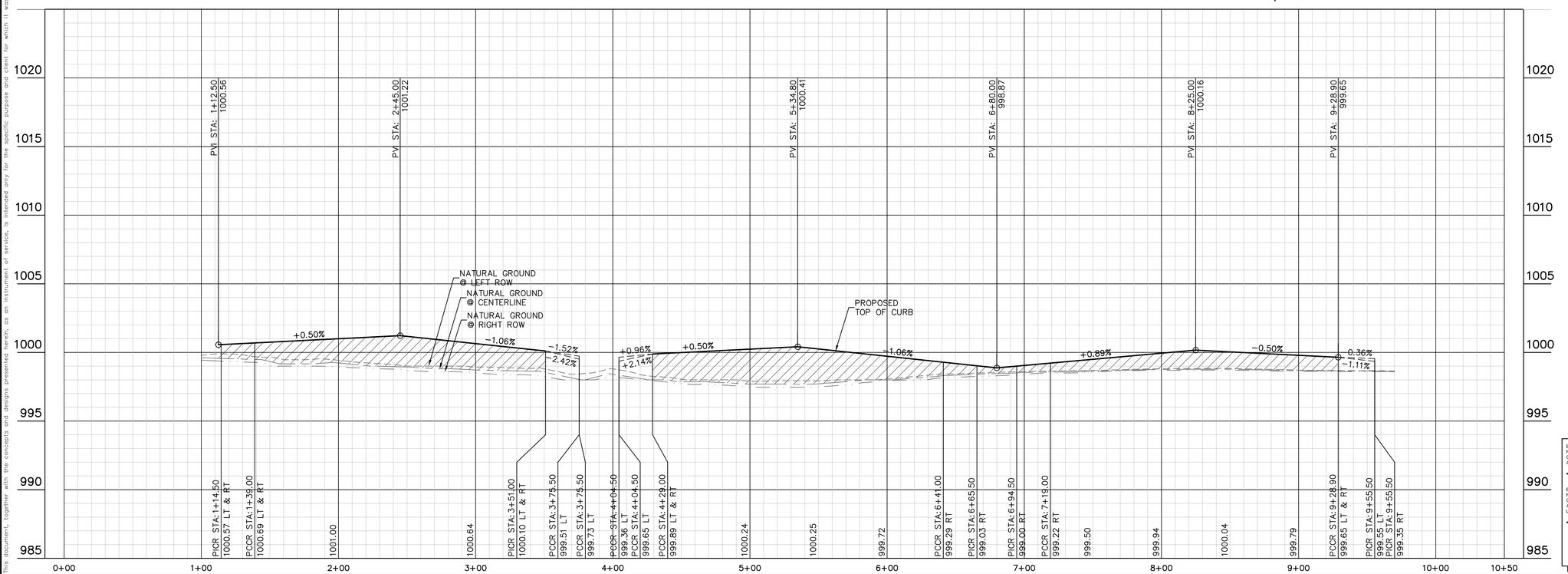
SHEET NUMBER
19 OF 48



0 40' 80'

GRAPHIC SCALE 40'

MOO MOO MEADOWS
STA: 1+00 - 9+57.51



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

BM #101, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT

- ELEV.=1002.370' (NAVD '88)

BM #102, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 40.57 ACRE TRACT BELONGING TO UPPER FORTY, LLC

- ELEV.=995.150' (NAVD '88)

No.	REVISIONS	DATE	BY

Kimley»Horn

10814 JOLLYVILLE ROAD, AVALLON IV, SUITE 300, AUSTIN, TX 78759
PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

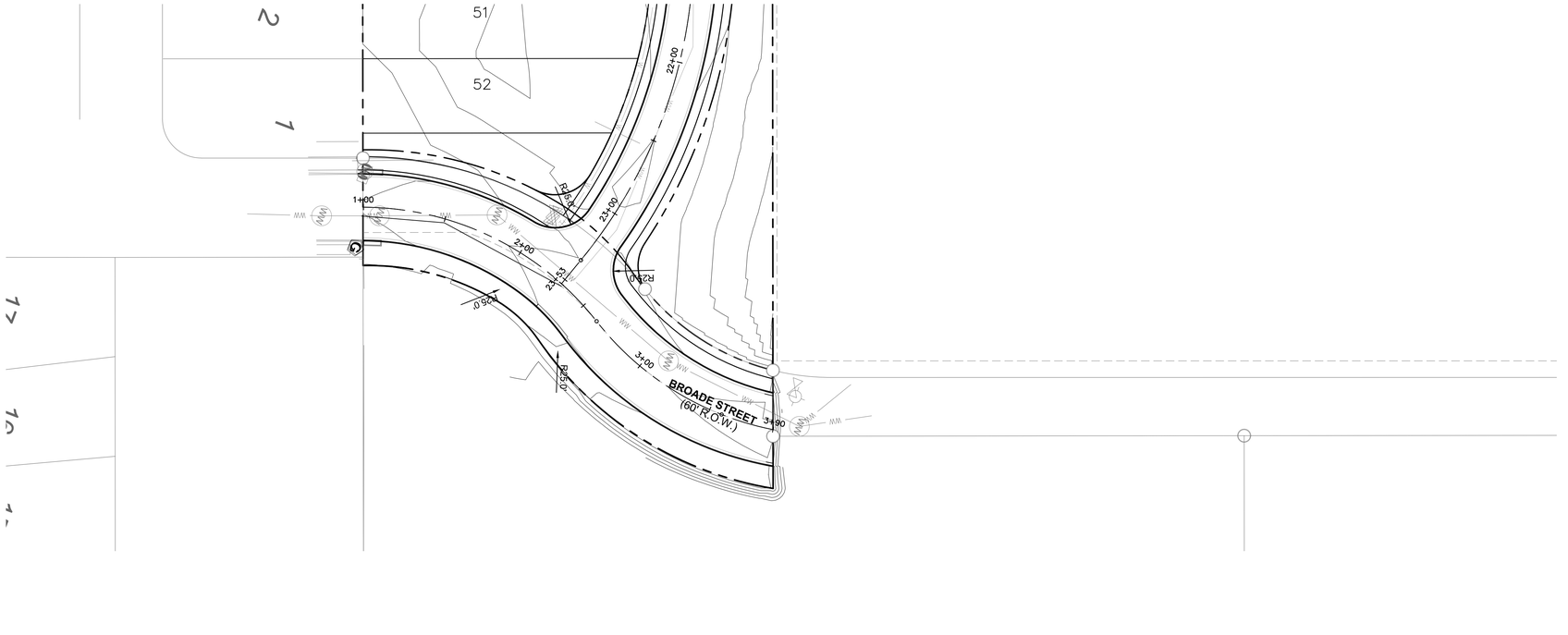
KHA PROJECT 069312667
DATE SEPTEMBER 2020
SCALE AS SHOWN
DESIGNED BY: BG
DRAWN BY: ORB
CHECKED BY: BG

PAVING P&P - MOO MOO MEADOWS

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

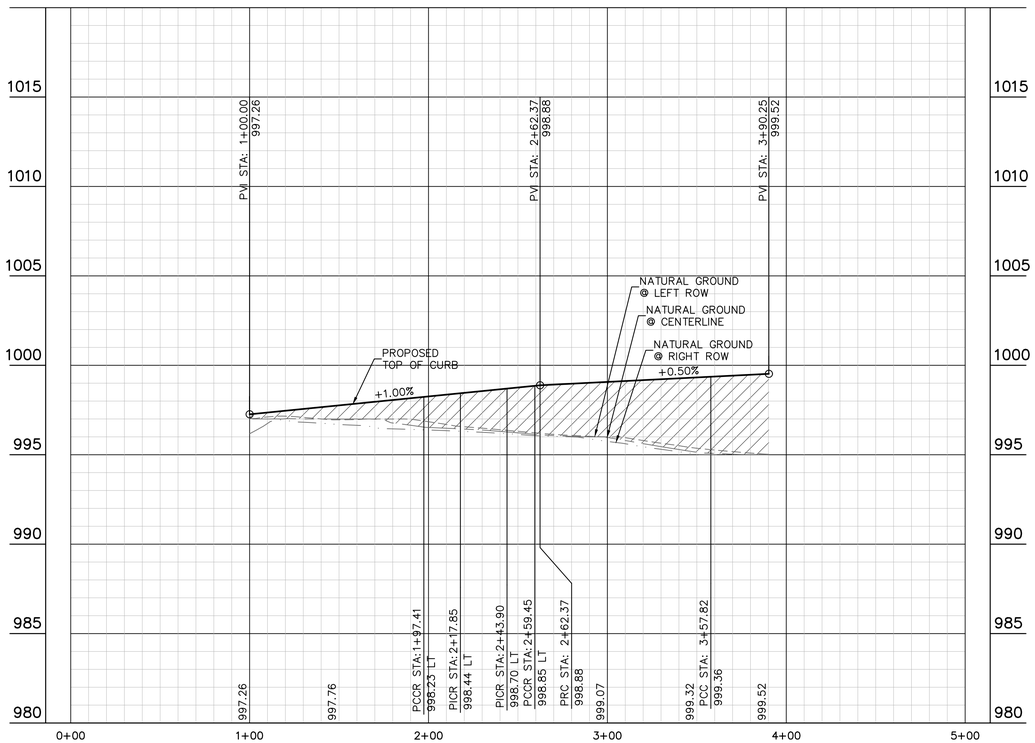
SHEET NUMBER
20 OF 48



0 40' 80'

GRAPHIC SCALE 40'

BROADE STREET
STA: 1+00 - 6+75.33



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

BENCHMARKS

BM #101, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT

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No.	REVISIONS	DATE	BY

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09-29-2020

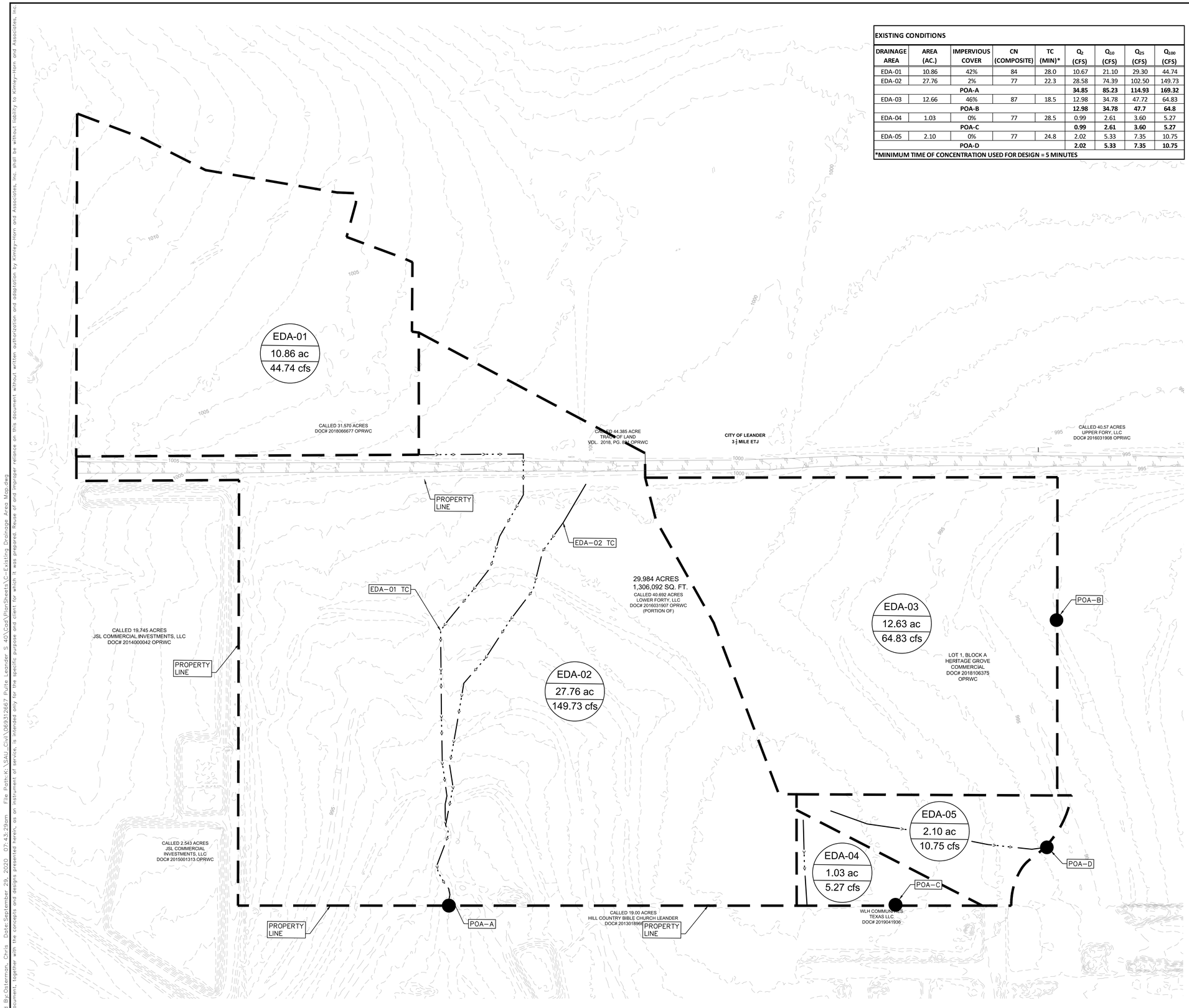
KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE:	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

PAVING P&P - BROADE STREET

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
21 OF 48



EXISTING CONDITIONS

DRAINAGE AREA	AREA (AC.)	IMPERVIOUS COVER	CN (COMPOSITE)	TC (MIN)*	Q_2 (CFS)	Q_{10} (CFS)	Q_{25} (CFS)	Q_{100} (CFS)
EDA-01	10.86	42%	84	28.0	10.67	21.10	29.30	44.74
EDA-02	27.76	2%	77	22.3	28.58	74.39	102.50	149.73
POA-A					**34.85**	**85.23**	**114.93**	**169.32**
EDA-03	12.66	46%	87	18.5	12.98	34.78	47.72	64.83
POA-B					**12.98**	**34.78**	**47.7**	**64.8**
EDA-04	1.03	0%	77	28.5	0.99	2.61	3.60	5.27
POA-C					**0.99**	**2.61**	**3.60**	**5.27**
EDA-05	2.10	0%	77	24.8	2.02	5.33	7.35	10.75
POA-D					**2.02**	**5.33**	**7.35**	**10.75**

*MINIMUM TIME OF CONCENTRATION USED FOR DESIGN = 5 MINUTES

EXISTING TIME OF CONCENTRATION CALCULATIONS

EDA-01*

Sheet Flow		Shallow		Channel Flow	
n=	-	paved?	no	v (fps)=	2
S (ft/ft)=	-	S (ft/ft)=	0.013	L (ft)=	245
L (ft)=	-	L (ft)=	760		
T_{t1} =	19.0	T_{t2} =	6.9	T_{t3} =	2.1

Total TC = 28.0 mins

EDA-02

Sheet Flow		Shallow		Channel Flow	
n=	0.15	paved?	no	v (fps)=	2
S (ft/ft)=	0.009	S (ft/ft)=	0.012	L (ft)=	245
L (ft)=	100	L (ft)=	754		
T_{t1} =	13.0	T_{t2} =	7.3	T_{t3} =	2.0

Total TC = 22.3 mins

EDA-03*

Sheet Flow		Shallow		Channel Flow	
n=	-	paved?	-	v (fps)=	-
S (ft/ft)=	-	S (ft/ft)=	-	L (ft)=	-
L (ft)=	-	L (ft)=	-		
T_{t1} =	-	T_{t2} =	-	T_{t3} =	-

Total TC = 18.5 mins

EDA-04

Sheet Flow		Shallow		Channel Flow	
n=	0.24	paved?	no	v (fps)=	-
S (ft/ft)=	0.005	S (ft/ft)=	0.008	L (ft)=	-
L (ft)=	100	L (ft)=	390		
T_{t1} =	24.0	T_{t2} =	4.5	T_{t3} =	-

Total TC = 28.5 mins

EDA-05

Sheet Flow		Shallow		Channel Flow	
n=	0.24	paved?	no	v (fps)=	-
S (ft/ft)=	0.005	S (ft/ft)=	0.015	L (ft)=	-
L (ft)=	100	L (ft)=	90		
T_{t1} =	24.0	T_{t2} =	0.8	T_{t3} =	-

Total TC = 24.8 mins

***EDA-01 AND EDA-03 INFORMATION BASED ON HAVEN OAKS SITE DEVELOPMENT & HERITAGE GROVE COMMERCIAL RESPECTIVELY**

NORTH

0 100' 200'
GRAPHIC SCALE 100'

LEGEND

- X-1 / 9.9 ac / 5.5 cfs — AREA DESIGNATOR / AREA IN ACRES / Q100 FLOW IN CFS
- PROPERTY LINE
- EXISTING STORM DRAIN LINE
- EXISTING DRAINAGE DIVIDE
- EXISTING STORM DRAIN INLET
- EXISTING STORM DRAIN MANHOLE
- EXISTING STORM DRAIN HEADWALL
- EXISTING FLOW DIRECTION
- 555 — EXISTING CONTOUR

NOTES:

1. ONSITE CONTOURS FROM SURVEY CONDUCTED BY CHAPARRAL SURVEYING ON JULY 15, 2019.
2. OFFSITE CONTOURS ARE REFERENCED FROM THE CITY OF AUSTIN G.I.S. DATA.
3. CONTOURS SHOWN ARE AT ONE FOOT INTERVALS.

BENCHMARKS

BM #101, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT

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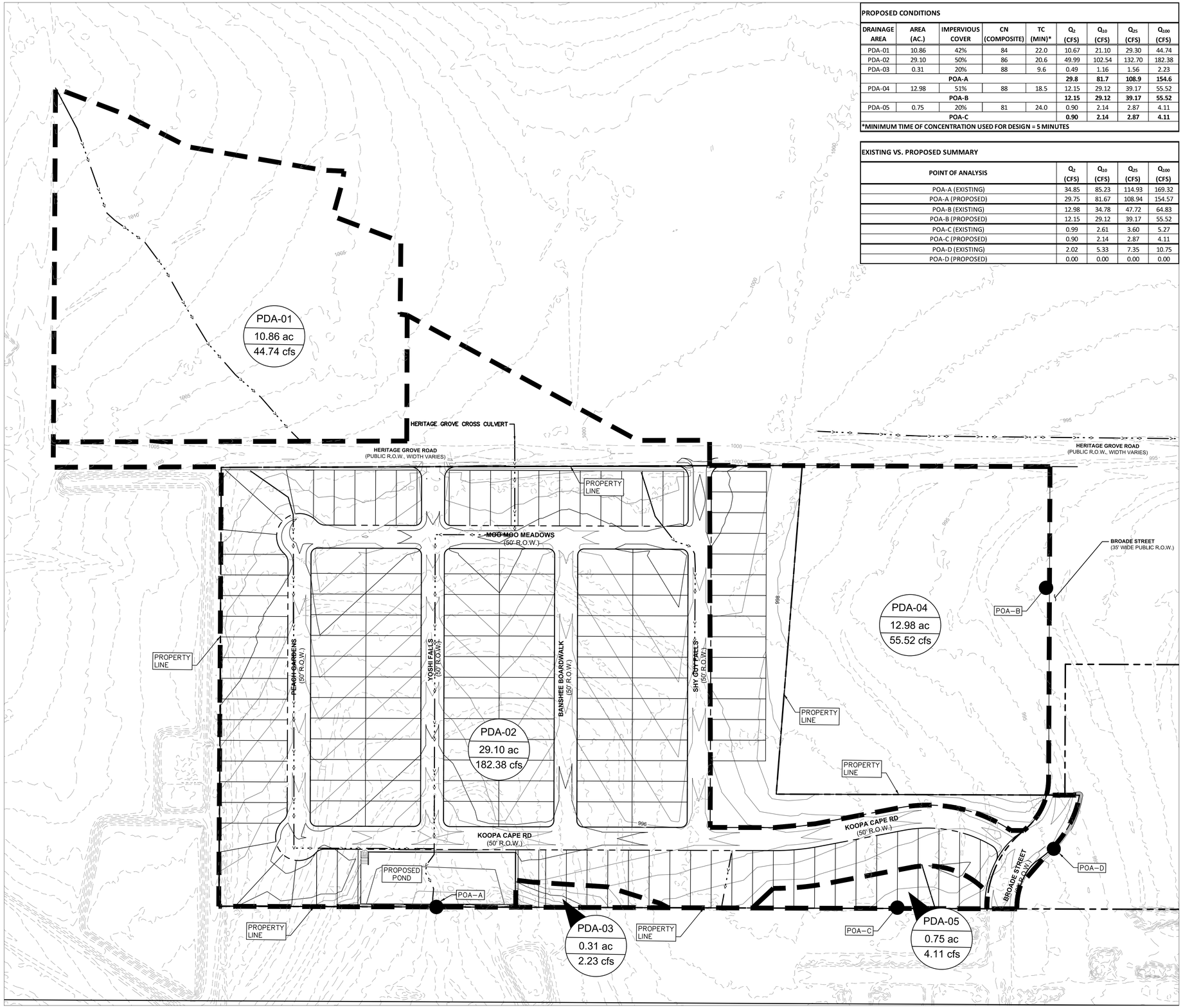
LICENSED PROFESSIONAL ENGINEER
09-29-2020

KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE:	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

EXISTING DRAINAGE AREA MAP

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS



PROPOSED CONDITIONS

DRAINAGE AREA	AREA (AC.)	IMPERVIOUS COVER	CN (COMPOSITE)	TC (MIN)*	Q_2 (CFS)	Q_{10} (CFS)	Q_{25} (CFS)	Q_{100} (CFS)
PDA-01	10.86	42%	84	22.0	10.67	21.10	29.30	44.74
PDA-02	29.10	50%	86	20.6	49.99	102.54	132.70	182.38
PDA-03	0.31	20%	88	9.6	0.49	1.16	1.56	2.23
POA-A					**29.8**	**81.7**	**108.9**	**154.6**
PDA-04	12.98	51%	88	18.5	12.15	29.12	39.17	55.52
POA-B					**12.15**	**29.12**	**39.17**	**55.52**
PDA-05	0.75	20%	81	24.0	0.90	2.14	2.87	4.11
POA-C					**0.90**	**2.14**	**2.87**	**4.11**

*MINIMUM TIME OF CONCENTRATION USED FOR DESIGN = 5 MINUTES

EXISTING VS. PROPOSED SUMMARY

POINT OF ANALYSIS	Q_2 (CFS)	Q_{10} (CFS)	Q_{25} (CFS)	Q_{100} (CFS)
POA-A (EXISTING)	34.85	85.23	114.93	169.32
POA-A (PROPOSED)	29.75	81.67	108.94	154.57
POA-B (EXISTING)	12.98	34.78	47.72	64.83
POA-B (PROPOSED)	12.15	29.12	39.17	55.52
POA-C (EXISTING)	0.99	2.61	3.60	5.27
POA-C (PROPOSED)	0.90	2.14	2.87	4.11
POA-D (EXISTING)	2.02	5.33	7.35	10.75
POA-D (PROPOSED)	0.00	0.00	0.00	0.00

NORTH

0 100' 200'
GRAPHIC SCALE 100'

LEGEND

X-1 / 9.9 ac / 5.5 cfs — AREA DESIGNATOR, AREA IN ACRES, Q100 FLOW IN CFS
PROPERTY LINE
EXISTING STORM DRAIN LINE
EXISTING DRAINAGE DIVIDE
EXISTING STORM DRAIN INLET
EXISTING STORM DRAIN MANHOLE
EXISTING STORM DRAIN HEADWALL
EXISTING FLOW DIRECTION
555 — EXISTING CONTOUR

NOTES:

1. ONSITE CONTOURS FROM SURVEY CONDUCTED BY CHAPARRAL SURVEYING ON JULY 15, 2019.
2. OFFSITE CONTOURS ARE REFERENCED FROM THE CITY OF AUSTIN G.I.S. DATA.
3. CONTOURS SHOWN ARE AT ONE FOOT INTERVALS.

PROPOSED TIME OF CONCENTRATION CALCULATIONS

PDA-01*

Sheet Flow		Shallow		Channel Flow	
n=	-	paved?	-	v (fps)=	6
S (ft/ft)=	-	S (ft/ft)=	-	L (ft)=	1185
L (ft)=	-	L (ft)=	-		
T_{t1} =	19.0	T_{t2} =	-	T_{t3} =	3.0
Total TC =	**22.0 mins**				

PDA-02

Sheet Flow		Shallow		Channel Flow	
n=	0.24	paved?	yes	v (fps)=	6
S (ft/ft)=	0.013	S (ft/ft)=	0.020	L (ft)=	670
L (ft)=	100	L (ft)=	405		
T_{t1} =	16.4	T_{t2} =	2.3	T_{t3} =	1.9
Total TC =	**20.6 mins**				

PDA-03

Sheet Flow		Shallow		Channel Flow	
n=	0.24	paved?	no	v (fps)=	-
S (ft/ft)=	0.050	S (ft/ft)=	0.050	L (ft)=	-
L (ft)=	100	L (ft)=	20		-
T_{t1} =	9.5	T_{t2} =	0.1	T_{t3} =	0.0
Total TC =	**9.6 mins**				

PDA-04

Sheet Flow		Shallow		Channel Flow	
n=	-	paved?	no	v (fps)=	-
S (ft/ft)=	-	S (ft/ft)=	-	L (ft)=	-
L (ft)=	-	L (ft)=	-		-
T_{t1} =	18.5	T_{t2} =	-	T_{t3} =	-
Total TC =	**18.5 mins**				

PDA-05

Sheet Flow		Shallow		Channel Flow	
n=	0.24	paved?	no	v (fps)=	-
S (ft/ft)=	0.005	S (ft/ft)=	-	L (ft)=	-
L (ft)=	100	L (ft)=	-		
T_{t1} =	24.0	T_{t2} =	-	T_{t3} =	-
Total TC =	**24.0 mins**				

***PDA-01 INFORMATION BASED ON HAVEN OAKS SITE DEVELOPMENT AND PROPOSED CONDITIONS**

BENCHMARKS

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09-29-2020

KHA PROJECT 069312667
DATE SEPTEMBER 2020
SCALE: AS SHOWN
DESIGNED BY: BG
DRAWN BY: ORB
CHECKED BY: BG

PROPOSED DRAINAGE AREA MAP

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
OF 48

Hydrologic Runoff Coefficients: Austin, TX

	2 yr	10 yr	25 yr	100 yr
Impervious C (Concrete)	0.75	0.83	0.88	0.95
Pervious C (Grass 0-2%)	0.25	0.3	0.34	0.41

0.3

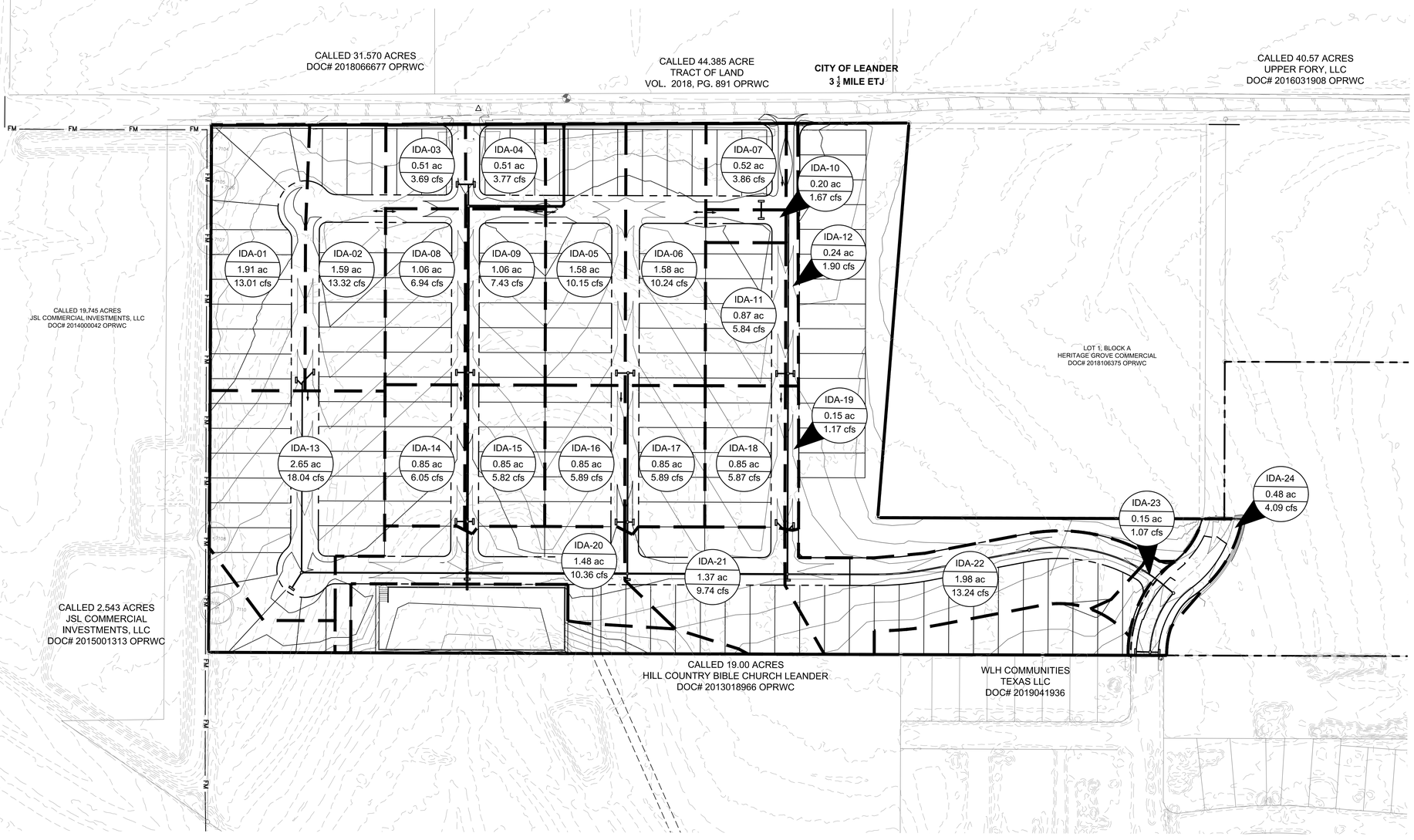
IDF Coefficients: Austin, TX

	2 yr	10 yr	25 yr	100 yr
a	46.99	60.75	64.56	76.9
b	9.575	8.361	7.382	6.726
c	0.7517	0.7185	0.6814	0.6554

Peak Flow Calculation - Rational Method — RUNOFF COEFFICIENT (C) — RAINFALL INTENSITY (I)

INLET	Area	Impervious	% I.C.	C	C	C	C	SHEET P-2yr24hr N	L (ft)	4.2 S (ft/ft)	IN Tt(min)	SHALLO L (ft)	V (fps)	S (ft/ft)	Tt(min)	TC (MIN)	I	I	I	I	Q	Q	Q	Q Intercepted	Q Passed
A-1	1.910	1.04	54.5%	0.52	0.59	0.63	0.70	0.30	100	0.02	**14.89**	366	3.02	0.022	**2.02**	16.91	4.00	5.97	7.34	9.67	3.99	6.71	8.89	13.01	13.01
A-2	1.590	0.91	56.9%	0.53	0.60	0.65	0.72	0.30	60	0.02	**10.66**	50	2.41	0.0141	**0.35**	11.01	4.84	7.22	8.88	11.68	4.11	6.91	9.14	13.32	13.32
A-3	0.510	0.30	59.6%	0.55	0.62	0.66	0.73	0.30	100	0.02	**15.82**	50	2.49	0.015	**0.33**	16.15	4.09	6.10	7.50	9.88	1.14	1.92	2.53	3.69	3.69
A-4	0.510	0.30	58.8%	0.54	0.61	0.66	0.73	0.30	100	0.02	**14.89**	50	2.41	0.0141	**0.35**	15.24	4.20	6.27	7.71	10.15	1.17	1.96	2.59	3.77	3.77
A-5	1.580	0.90	56.6%	0.53	0.60	0.65	0.72	0.30	100	0.02	**16.24**	428	2.01	0.0098	**3.54**	19.78	3.70	5.52	6.80	8.97	3.12	5.24	6.94	10.15	10.15
A-6	1.580	0.90	57.0%	0.53	0.60	0.65	0.72	0.30	100	0.02	**14.89**	428	1.53	0.0057	**4.65**	19.54	3.73	5.56	6.85	9.03	3.15	5.29	7.01	10.24	10.24
A-7	0.520	0.31	59.6%	0.55	0.62	0.66	0.73	0.30	100	0.02	**14.89**	50	2.35	0.0134	**0.35**	15.24	4.20	6.27	7.71	10.15	1.20	2.01	2.65	3.86	3.86
A-8	1.060	0.62	58.0%	0.54	0.61	0.65	0.72	0.30	100	0.02	**16.12**	400	2.00	0.0097	**3.33**	19.45	3.74	5.57	6.86	9.05	2.14	3.59	4.75	6.94	6.94
A-9	1.060	0.62	58.5%	0.54	0.61	0.66	0.73	0.30	100	0.02	**14.89**	400	3.23	0.0252	**2.07**	16.96	4.00	5.96	7.33	9.66	2.30	3.85	5.10	7.43	7.43
A-10	0.200	0.14	67.5%	0.59	0.66	0.70	0.77	0.30	100	0.03	**13.02**	50	2.46	0.0146	**0.34**	13.35	4.46	6.65	8.18	10.77	0.52	0.88	1.15	1.67	1.67
A-11	0.870	0.48	54.6%	0.52	0.59	0.63	0.70	0.30	100	0.02	**16.20**	225	2.97	0.0214	**1.26**	17.46	3.94	5.88	7.23	9.53	1.79	3.01	3.99	5.84	5.84
A-12	0.240	0.21	87.5%	0.69	0.76	0.81	0.88	0.30	100	0.02	**14.89**	500	1.70	0.007	**4.90**	19.79	3.70	5.52	6.80	8.97	0.61	1.01	1.33	1.90	1.90
A-13	2.650	1.48	56.0%	0.53	0.60	0.64	0.71	0.30	100	0.02	**15.20**	350	2.70	0.0177	**2.16**	17.36	3.95	5.89	7.25	9.56	5.55	9.32	12.34	18.04	18.04
A-14	0.850	0.48	55.9%	0.53	0.60	0.64	0.71	0.30	100	0.02	**14.39**	235	2.85	0.0196	**1.38**	15.76	4.14	6.17	7.59	10.00	1.86	3.13	4.14	6.05	6.05
A-15	0.860	0.48	55.8%	0.53	0.60	0.64	0.71	0.30	100	0.02	**14.89**	235	1.49	0.0054	**2.62**	17.51	3.94	5.87	7.22	9.52	1.79	3.01	3.98	5.82	5.82
A-16	0.850	0.48	56.5%	0.53	0.60	0.64	0.71	0.30	100	0.02	**15.40**	235	2.71	0.0178	**1.44**	16.84	4.01	5.98	7.36	9.69	1.81	3.05	4.03	5.89	5.89
A-17	0.860	0.48	55.8%	0.53	0.60	0.64	0.71	0.30	100	0.02	**14.89**	235	1.78	0.0077	**2.20**	17.09	3.98	5.94	7.31	9.63	1.81	3.04	4.03	5.89	5.89
A-18	0.850	0.48	56.5%	0.53	0.60	0.64	0.71	0.30	100	0.02	**14.89**	235	1.89	0.0086	**2.08**	16.97	4.00	5.96	7.33	9.66	1.81	3.03	4.02	5.87	5.87
A-19	0.150	0.12	80.0%	0.65	0.72	0.77	0.84	0.30	100	0.02	**16.53**	235	1.86	0.0084	**2.10**	18.63	3.82	5.69	7.01	9.24	0.37	0.62	0.81	1.17	1.17
A-20	1.480	0.91	61.5%	0.56	0.63	0.67	0.74	0.30	100	0.02	**14.89**	265	1.49	0.0054	**2.96**	17.85	3.90	5.81	7.16	9.43	3.22	5.38	7.12	10.36	10.36
A-21	1.370	0.81	59.1%	0.55	0.61	0.66	0.73	0.30	100	0.02	**15.40**	200	2.71	0.0178	**1.23**	16.62	4.04	6.02	7.40	9.75	3.02	5.06	6.69	9.74	9.74
A-22	1.980	1.23	62.1%	0.56	0.63	0.68	0.75	0.30	100	0.02	**14.89**	525	1.78	0.0077	**4.91**	19.80	3.70	5.52	6.80	8.97	4.11	6.87	9.09	13.24	13.24
A-23	0.150	0.08	53.3%	0.52	0.58	0.63	0.70	0.30	100	0.02	**14.89**	25	1.89	0.0086	**0.22**	15.11	4.22	6.29	7.74	10.19	0.33	0.55	0.73	1.07	1.07
A-24	0.480	0.44	91.7%	0.71	0.79	0.84	0.91	0.30	100	0.02	**16.53**	150	1.86	0.0084	**1.34**	17.87	3.90	5.81	7.15	9.43	1.32	2.19	2.87	4.09	4.09

Runoff



BENCHMARKS

BM #101, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT

- ELEV.=1002.370' (NAVD '88)

BM #102, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 40.57 ACRE TRACT BELONGING TO UPPER FORTY, LLC

- ELEV.=995.150' (NAVD '88)

NORTH

0 100' 200'

GRAPHIC SCALE 100'

LEGEND

X-1 / 9.9 ac / 5.5 cfs — AREA DESIGNATOR, AREA IN ACRES, Q100 FLOW IN CFS

PROPERTY LINE

EXISTING STORM DRAIN LINE

EXISTING DRAINAGE DIVIDE

EXISTING STORM DRAIN INLET

EXISTING STORM DRAIN MANHOLE

EXISTING STORM DRAIN HEADWALL

EXISTING FLOW DIRECTION

555 — EXISTING CONTOUR

NOTES:

1. ONSITE CONTOURS FROM SURVEY CONDUCTED BY CHAPARRAL SURVEYING ON JULY 15, 2019.
2. OFF-SITE CONTOURS ARE REFERENCED FROM THE CITY OF AUSTIN G.I.S. DATA.
3. CONTOURS SHOWN ARE AT ONE FOOT INTERVALS.

No.	REVISIONS	DATE	BY

Kimley»Horn

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PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED PROFESSIONAL ENGINEER
09-29-2020

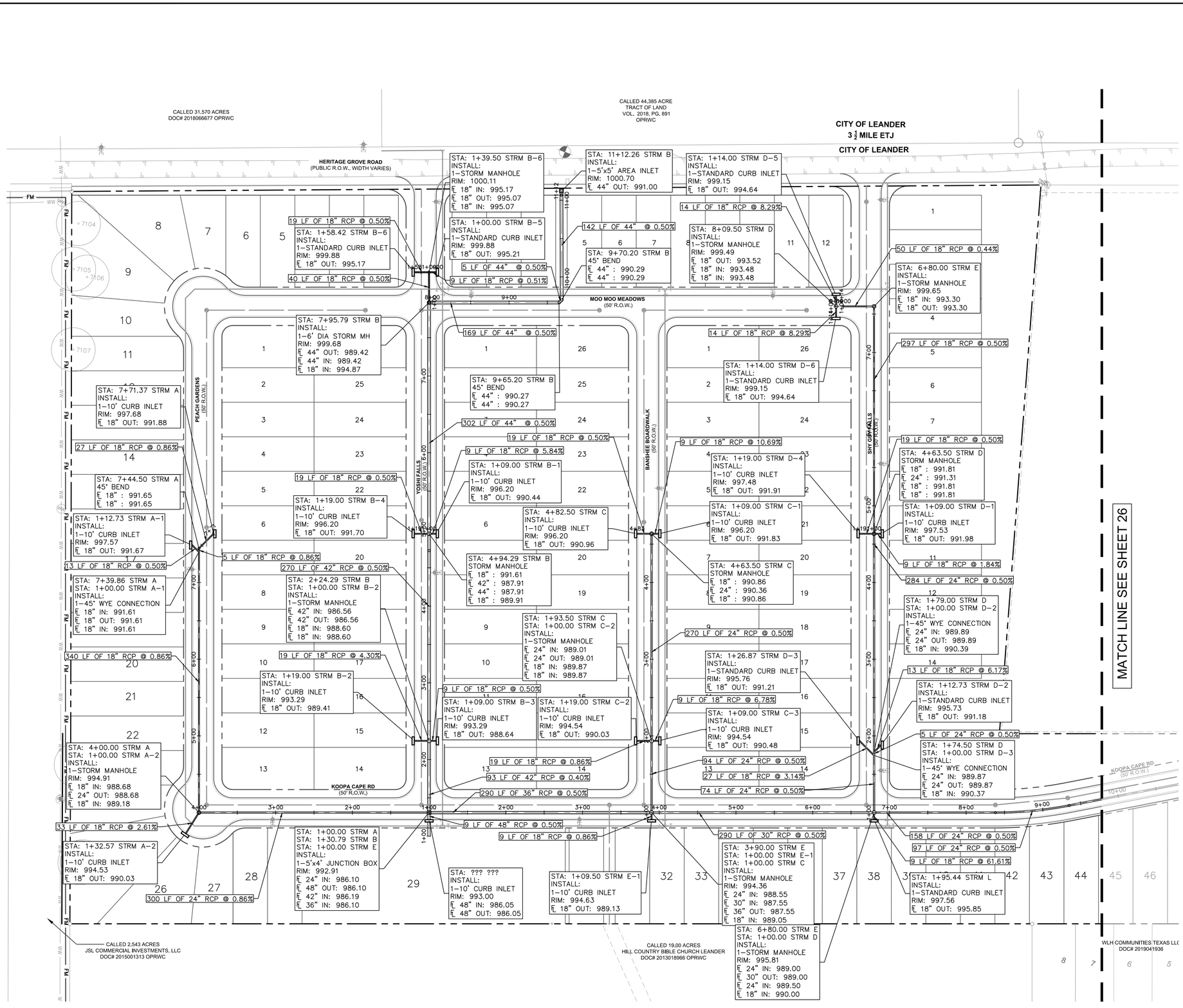
KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE:	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

INLET DRAINAGE AREA MAP

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
24 OF 48



LEGEND

- PROPERTY LINE
- W — EXISTING WATER LINE
- UFO — EXISTING UNDERGROUND FIBER OPTIC LINE
- UGT — EXISTING UNDERGROUND TELEPHONE LINE
- GAS — EXISTING GAS LINE
- OHE — EXISTING OVERHEAD ELECTRIC LINE
- PROPOSED FIRE HYDRANT
- W — PROPOSED WATER LINE
- WW — PROPOSED SANITARY SEWER LINE
- PROPOSED STORM SEWER LINE
- DOUBLE SANITARY SEWER SERVICE
- SINGLE SANITARY SEWER SERVICE

1. ALL DIMENSIONS ARE TO CENTERLINE OF PIPE UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTACT ENGINEER IF FIELD CONDITIONS VARY.
3. CONTRACTOR TO PROVIDE CL IV RCP AT ALL LOCATIONS WITH LESS THAN 2.0' OF COVERAGE.

BENCHMARKS

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DRAWN BY: ORB
CHECKED BY: BG

STORM PLAN (SHEET 1 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
25 OF 48

CALLED 40.57 ACRES
UPPER FORY, LLC
DOC# 2016031908 OPRWC

29.79 ACRE SURVEY

HERITAGE GROVE ROAD
(PUBLIC R.O.W., WIDTH VARIES)

BROADE STREET
(35' WIDE PUBLIC R.O.W.)

LOT 1, BLOCK A
HERITAGE GROVE COMMERCIAL
DOC# 2018106375 OPRWC

MATCH LINE SEE SHEET 25

KOOPA CAPE RD
(50' R.O.W.)

WLH COMMUNITIES TEXAS LLC
DOC# 2019041936

CALLED 3.00 ACRES
GREG BRULL
DOC# 2006045358 OPRWC

U.S. HWY 183
(120' WIDE PUBLIC R.O.W.)

187 LF OF 24" RCP @ 0.50%

STA: 11+21.83 STRM E
INSTALL:
1-STORM MANHOLE
RIM: 998.02
FL 24" OUT: 991.21
FL 24" OUT: 991.21

223 LF OF 24" RCP @ -0.50%

STA: 13+44.60 STRM E
PIPE SIZE CHANGE
FL 24" : 992.32
FL 18" : 992.31

37 LF OF 18" RCP @ -0.50%

STA: 14+04.74 STRM E
INSTALL:
1-STORM MANHOLE
RIM: 998.25
FL 18" IN: 992.61
FL 18" IN: 992.61

117 LF OF 18" RCP @ 0.50%

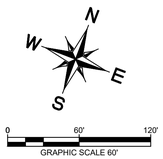
25 LF OF 18" RCP @ 1.43%

STA: 2+16.81 STRM L
INSTALL:
1-STANDARD CURB INLET
RIM: 996.96
FL 18" IN: 993.02

15 LF OF 18" RCP @ 2.29%

STA: 2+17.27 STRM L
INSTALL:
1-STORM MANHOLE
RIM: 997.04
FL 18" OUT: 993.20
FL 18" OUT: 993.37
FL 18" OUT: 993.37

STA: 2+17.43 STRM L
INSTALL:
1-STANDARD CURB INLET
RIM: 996.96
FL 18" IN: 993.01



LEGEND

	PROPERTY LINE
W	EXISTING WATER LINE
UFO	EXISTING UNDERGROUND FIBER OPTIC LINE
UGT	EXISTING UNDERGROUND TELEPHONE LINE
GAS	EXISTING GAS LINE
OHE	EXISTING OVERHEAD ELECTRIC LINE
	PROPOSED FIRE HYDRANT
W	PROPOSED WATER LINE
WW	PROPOSED SANITARY SEWER LINE
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	SINGLE SANITARY SEWER SERVICE

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STATE OF TEXAS
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109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE:	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

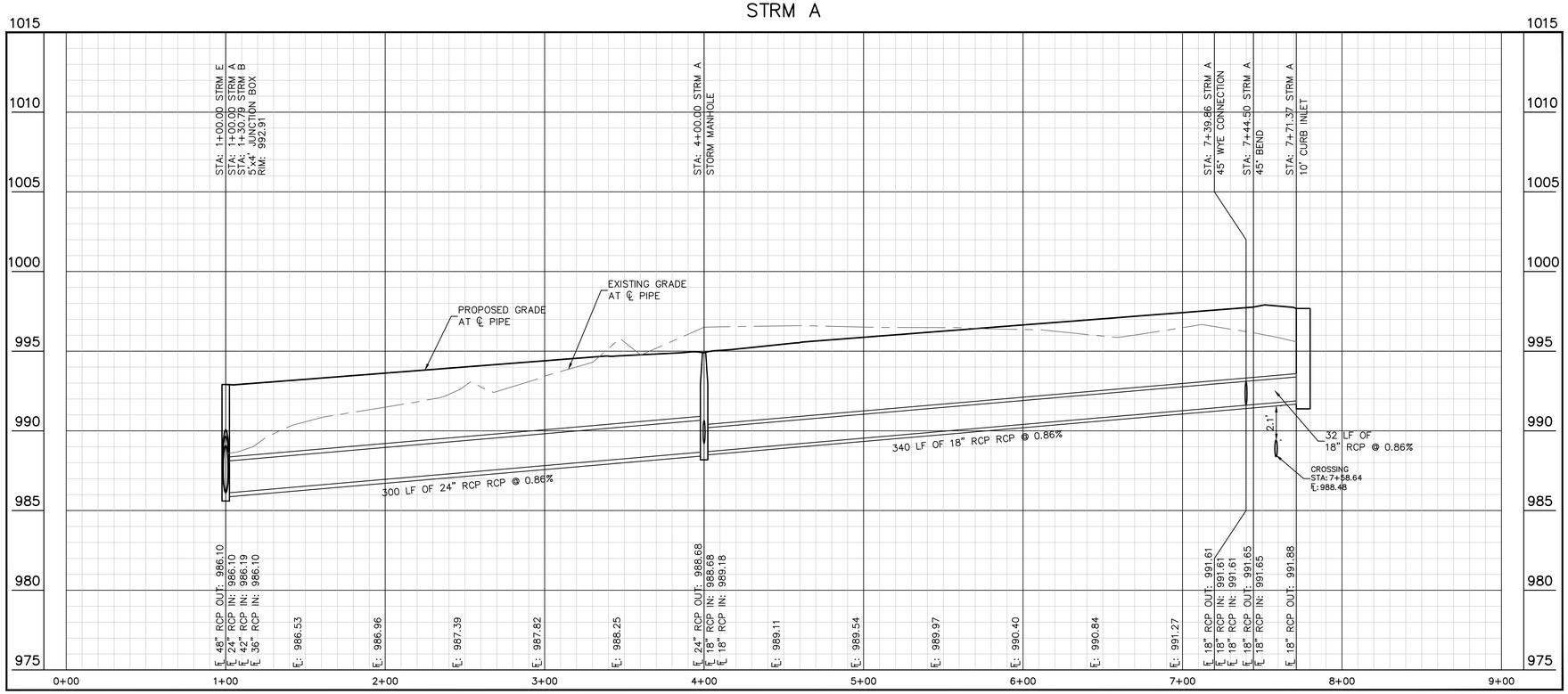
STORM PLAN (SHEET 2 OF 2)

RESERVE AT NORTH FORK

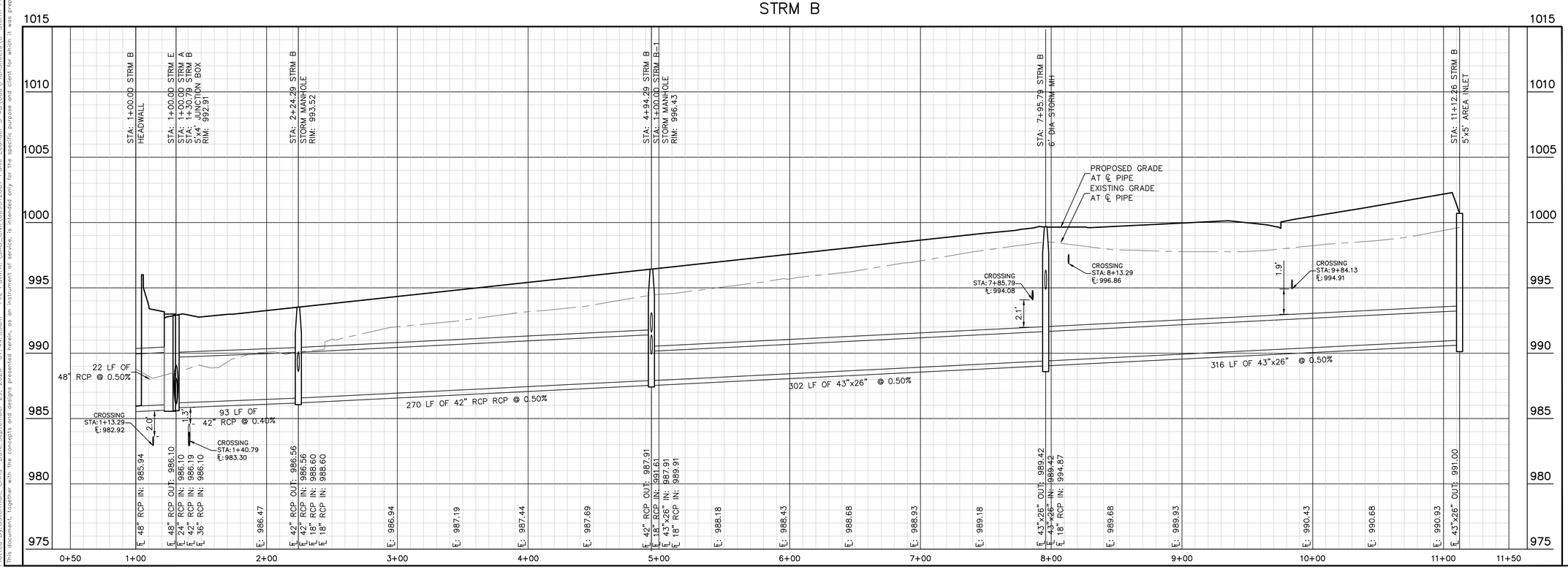
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
26 OF 48

STRM A



STRM B



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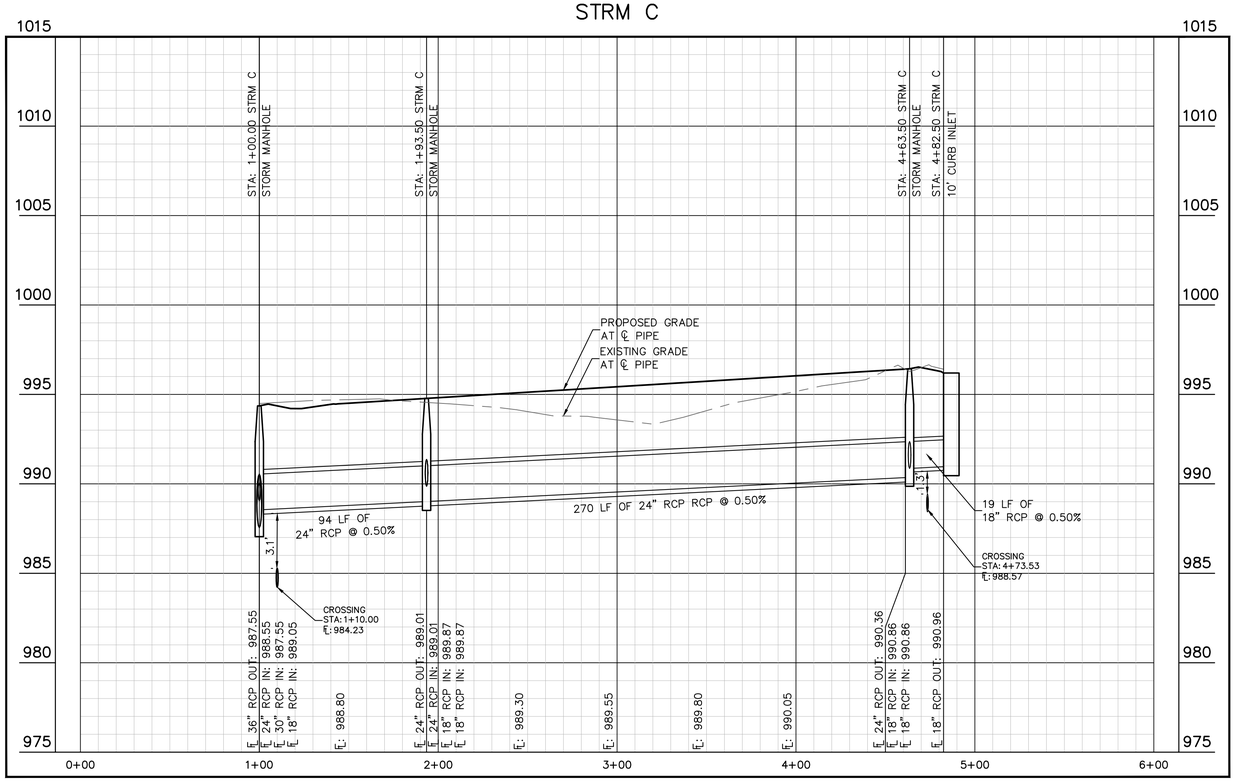
STORM PROFILES (SHEET 1 OF 3)

RESERVE AT NORTH FORK

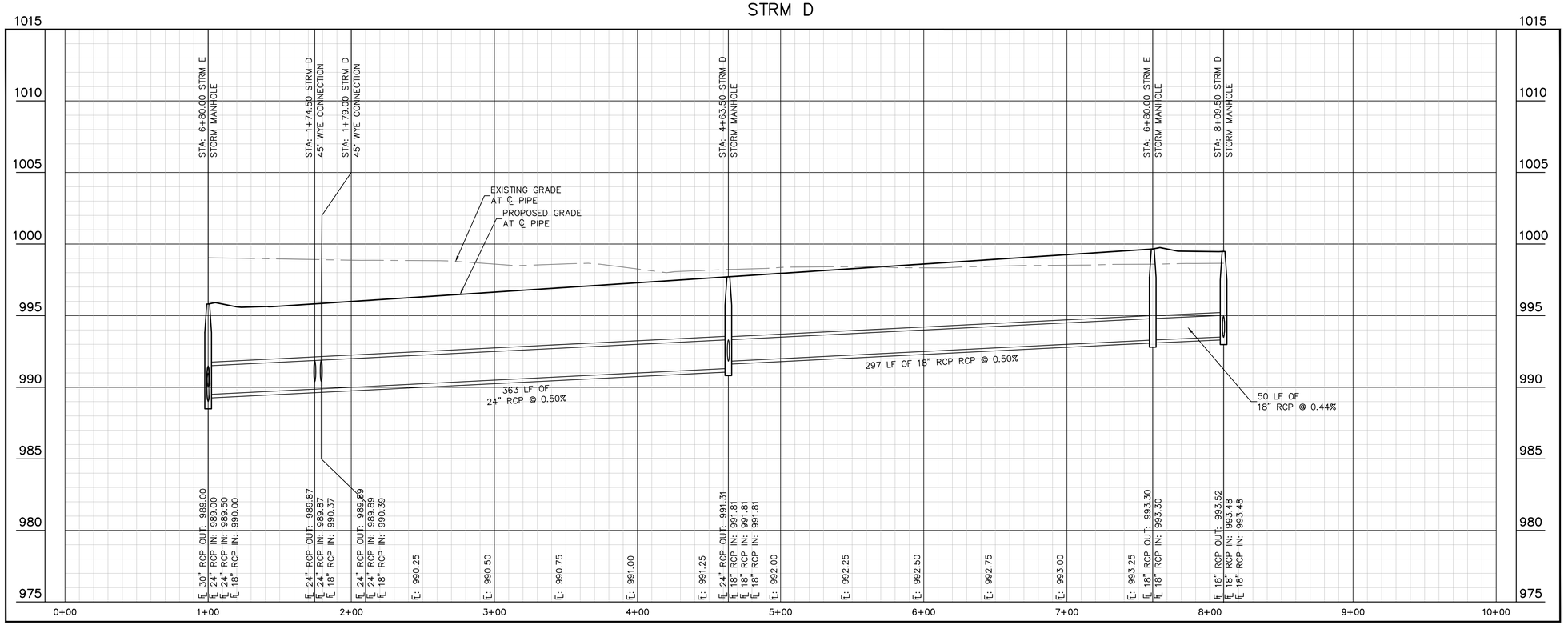
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
27 OF 48

STRM C



STRM D



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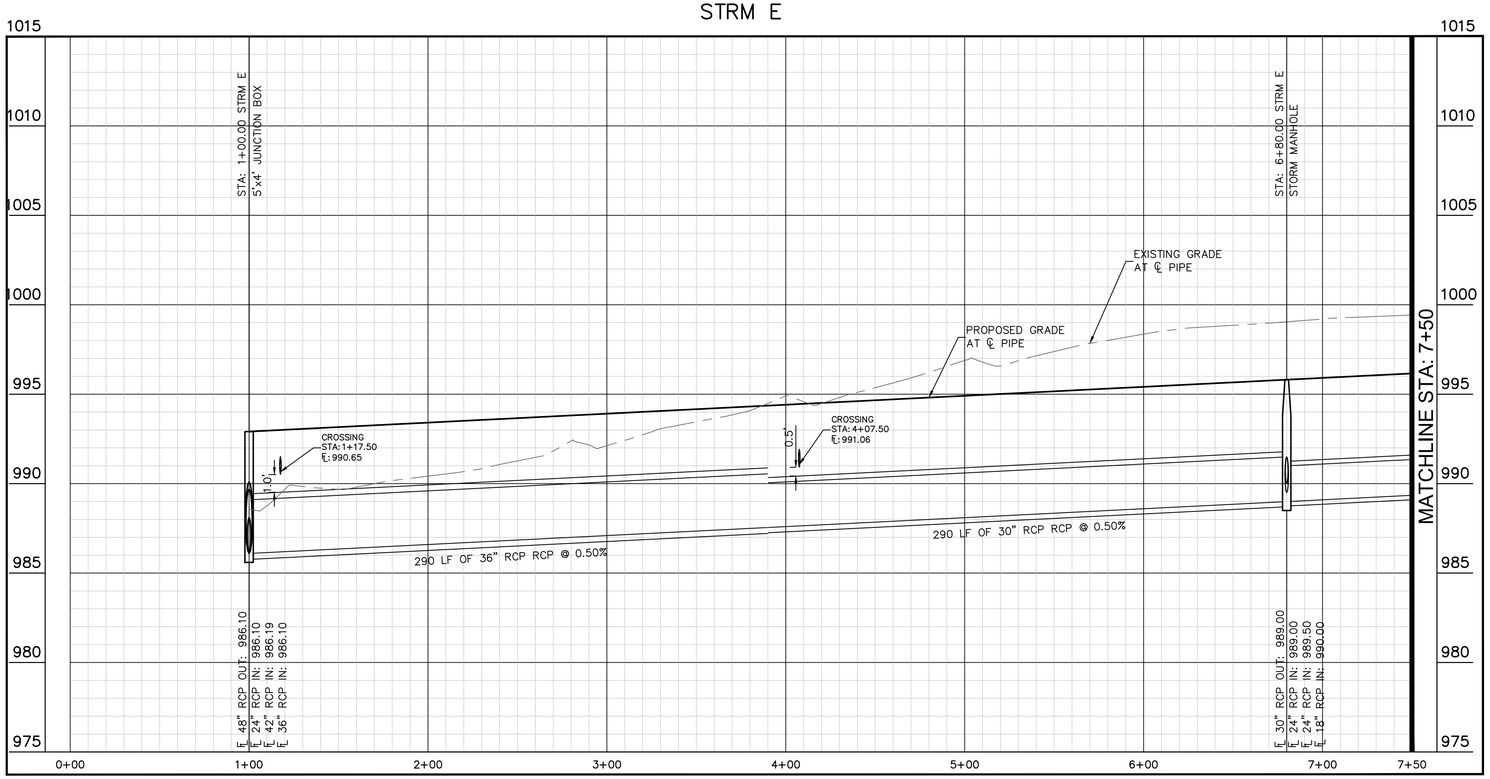
STORM PROFILES (SHEET 2 OF 3)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

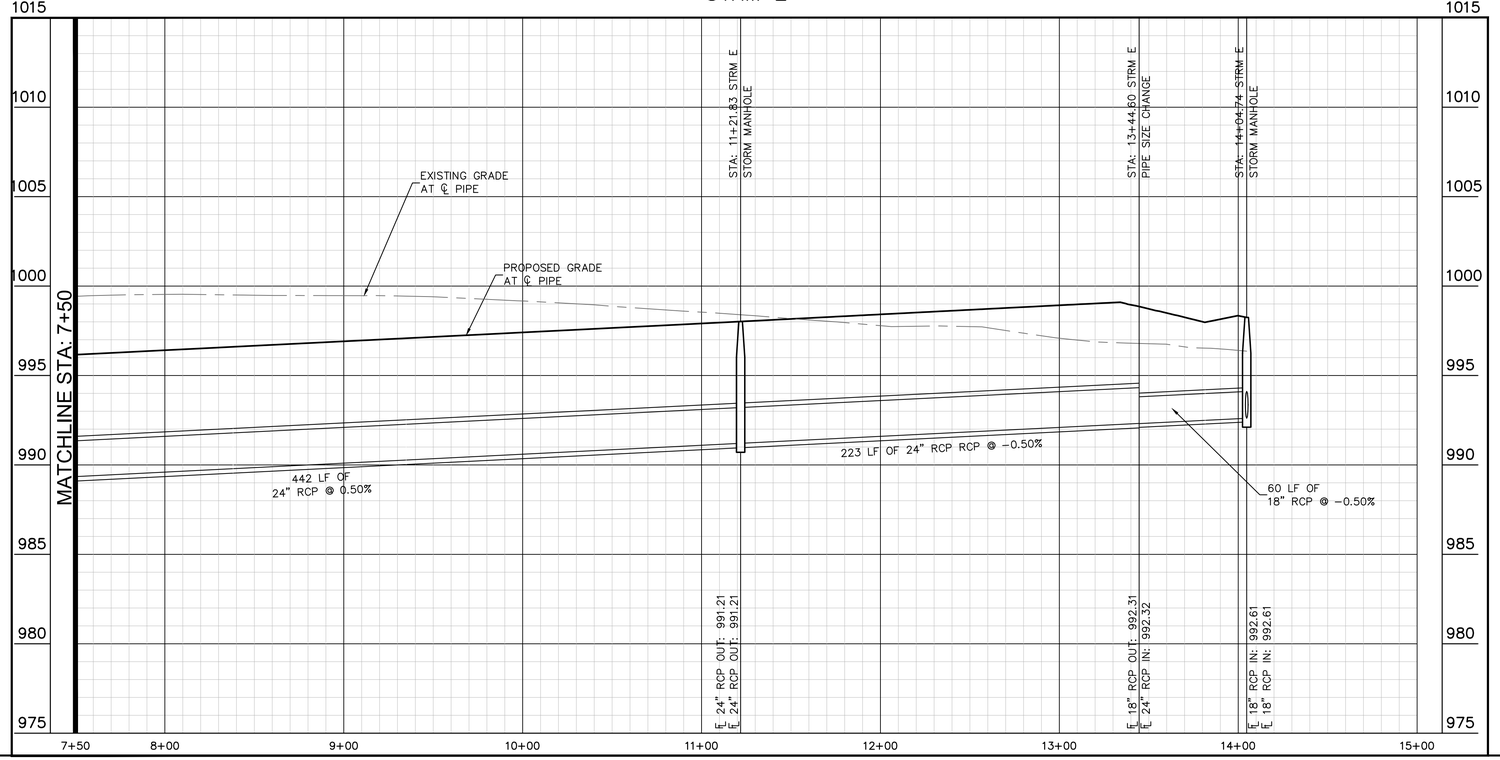
SHEET NUMBER
28 OF 48

STRM E



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

STRM E



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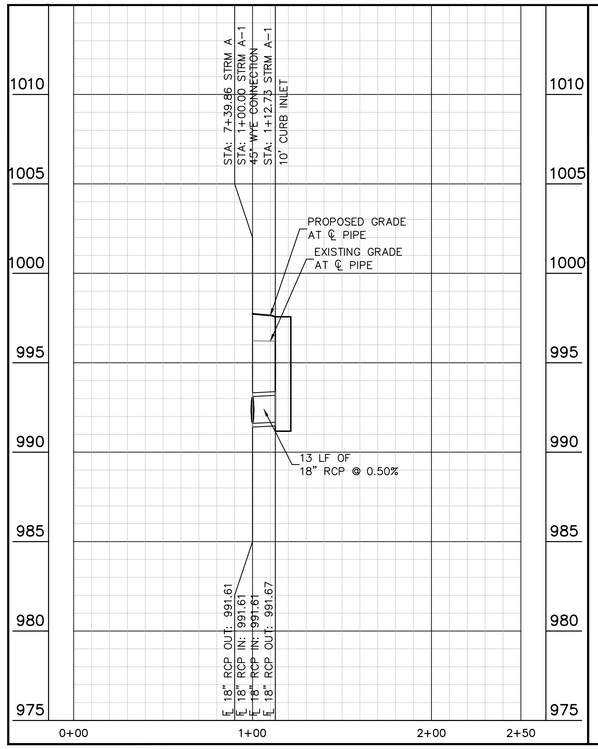
STORM PROFILES (SHEET 3 OF 3)

RESERVE AT NORTH FORK

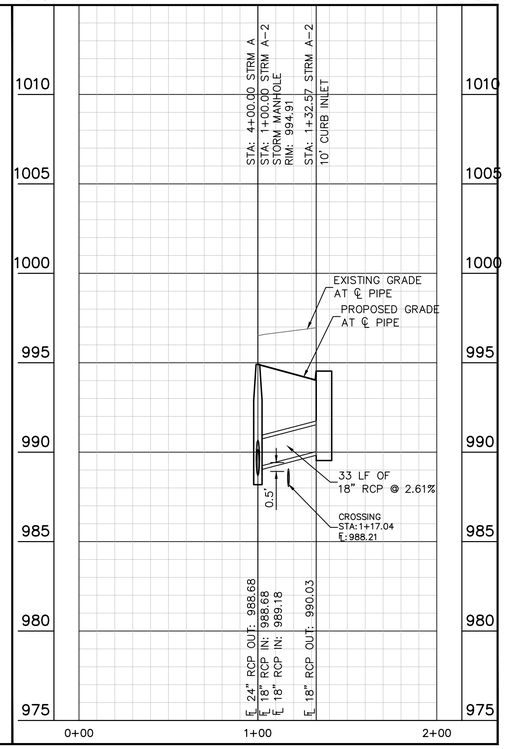
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
29 OF 48

STRM A-1



STRM A-2



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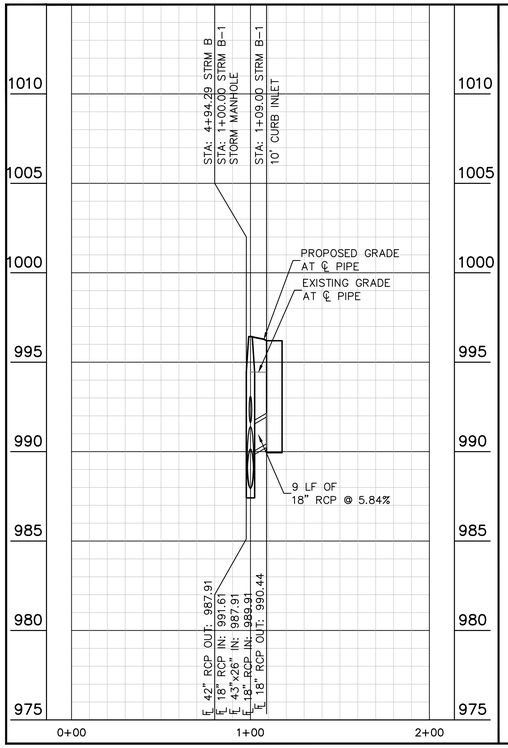

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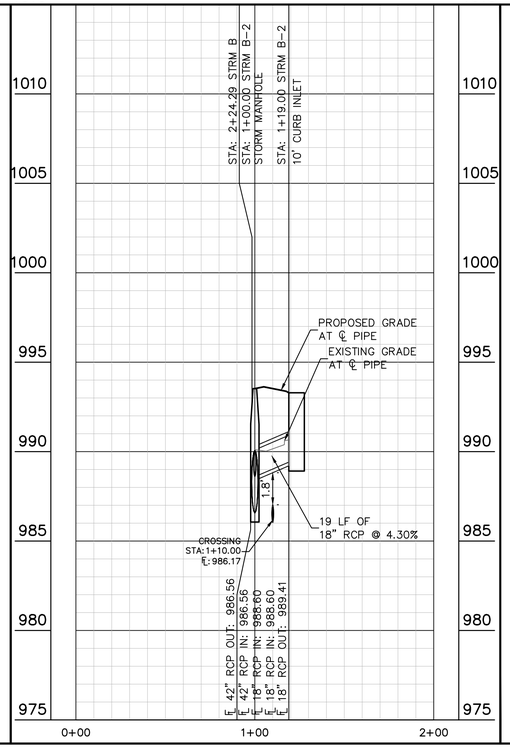

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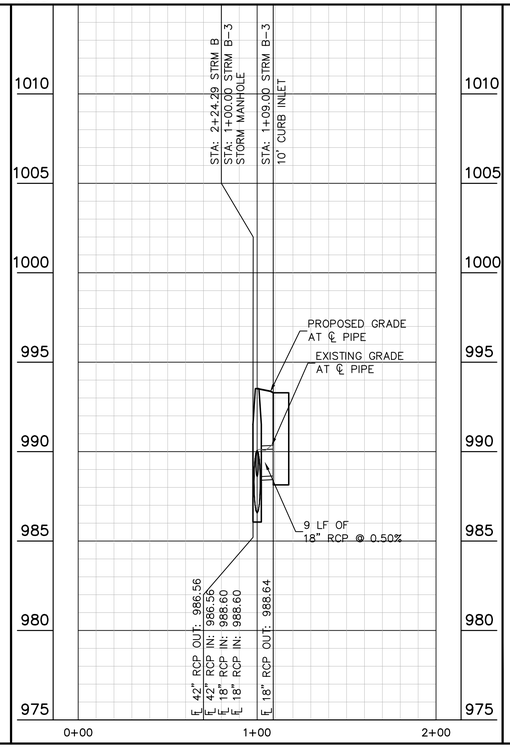

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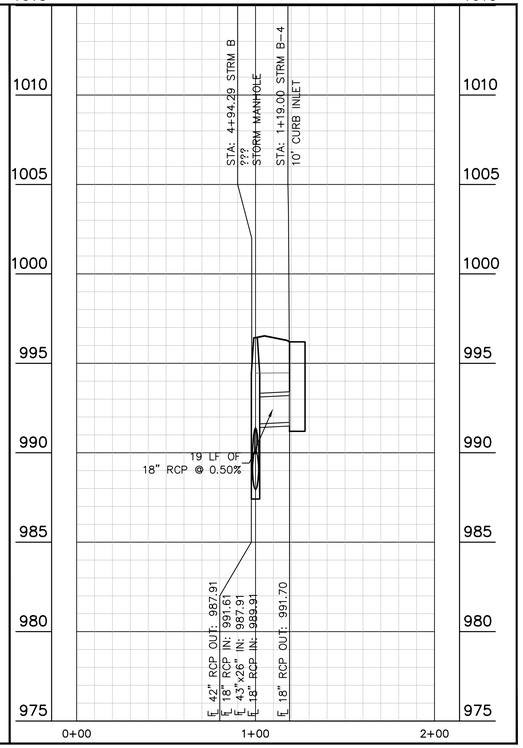

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KHA PROJECT 069312667		
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SCALE: AS SHOWN	DESIGNED BY:	BG
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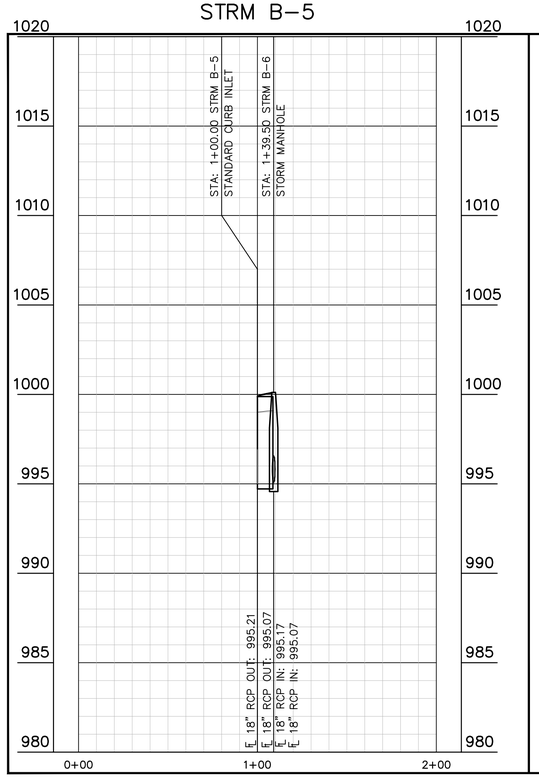
STORM LATERALS (SHEET 1 OF 3)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
30 OF 48

STRM B-5



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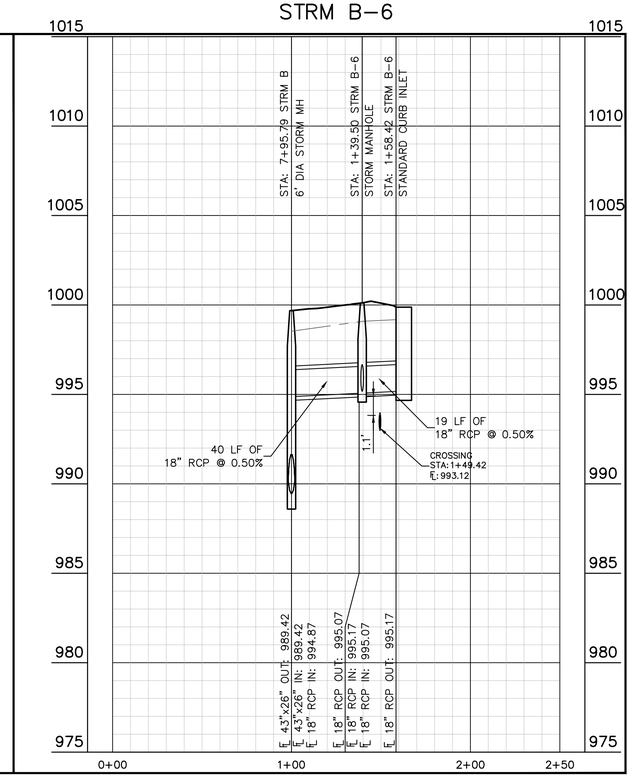
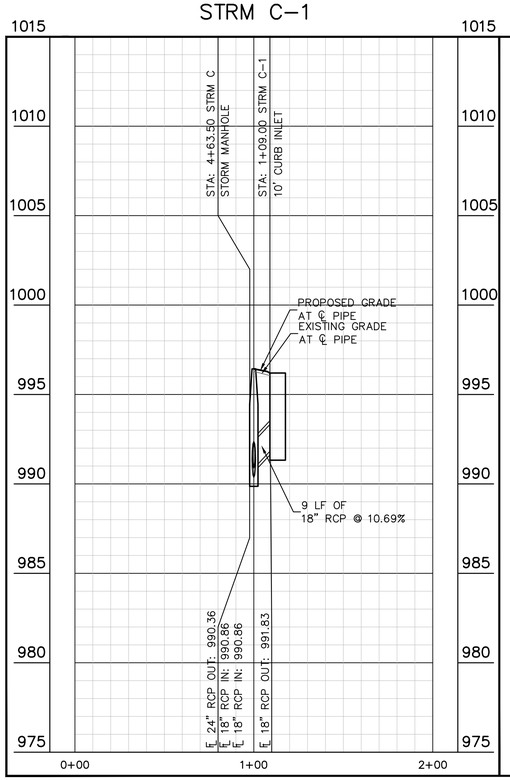


STRM C-1



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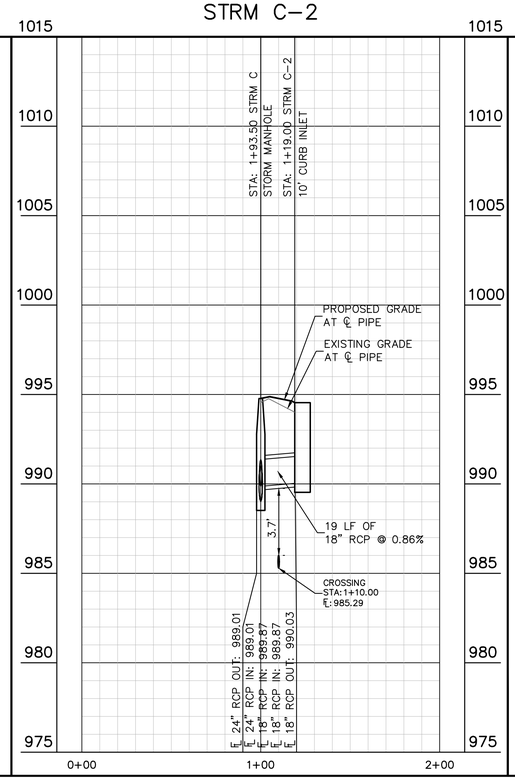
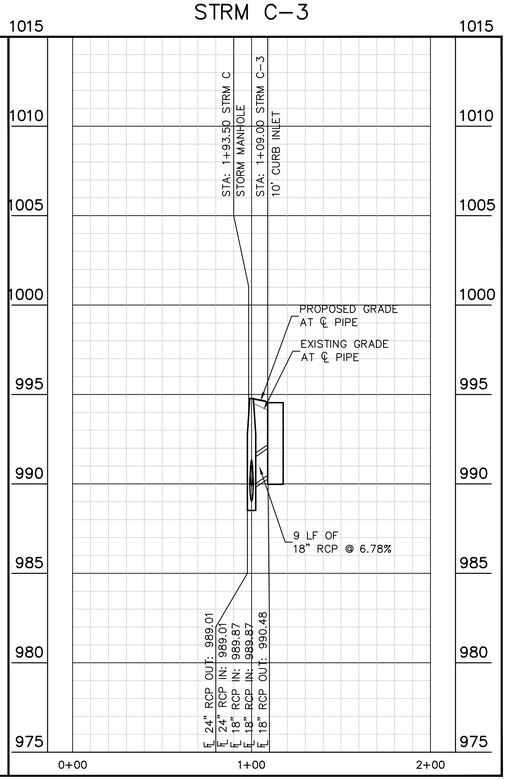


STRM C-3



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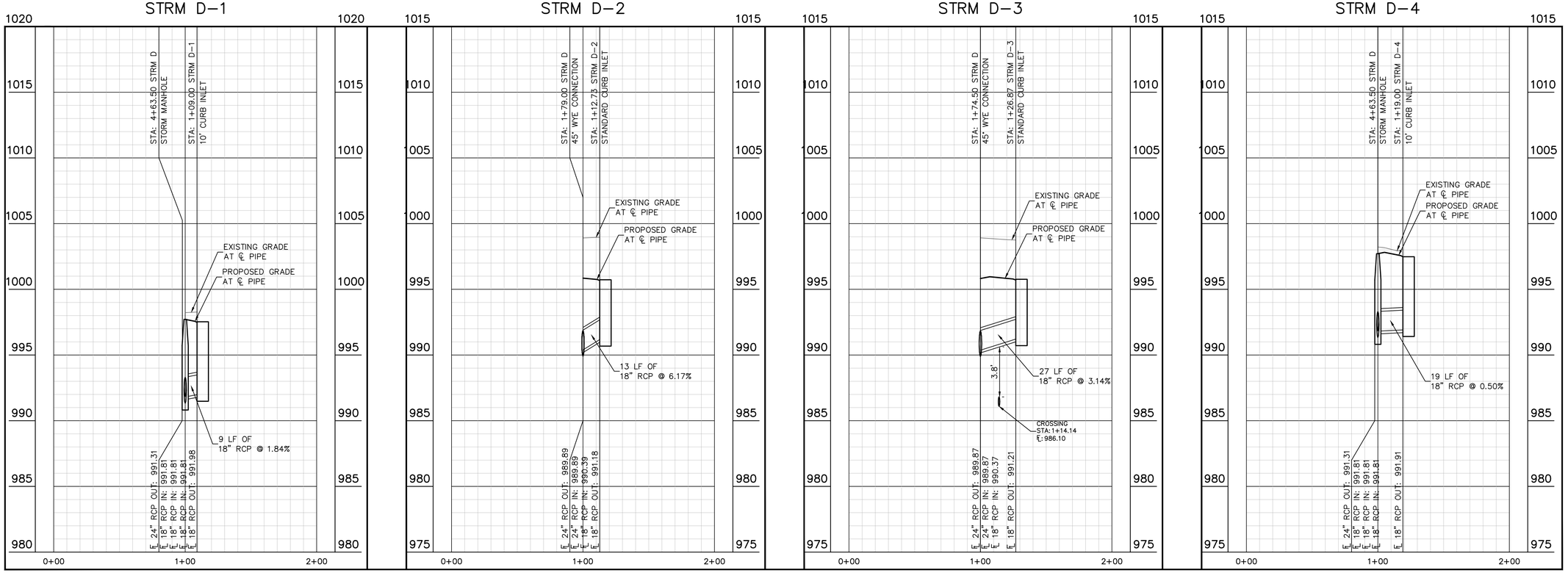
STORM LATERALS (SHEET 2 OF 3)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
31 OF 48



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STORM LATERALS (SHEET 3 OF 3)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
32 OF 48

CALLED 31.570 ACRES
DOC# 2018066677 OPRWC

CALLED 44.385 ACRE
TRACT OF LAND
VOL. 2018, PG. 891
OPRWC

HERITAGE GROVE ROAD
(PUBLIC R.O.W., WIDTH VARIES)

STA: 1+00.00 WL–C
CONNECT TO EXIST WATER

STA: 1+00.00 WL–A
INSTALL:
1– 8"X 8" TEE
1–8" PLUG

STA: 1+00.00 WL–E
STA: 11+63.28 WL–G
INSTALL:
1– 12"x8" TEE

STA: 13+53.39 WL–G
CONNECT TO EXISTING
12" WATER LINE

STA: 1+00.00 WL–A
STA: 5+83.30 WL–G
INSTALL:
1– 12"x12" TEE
1– 8" REDUCER

STA: 2+26.25 WL–C
INSTALL:
1–12" PLUG

STA: 2+46.25 WL–C
FIRE HYDRANT ASSEMBLY

STA: 5+30.45 WL–B
FIRE HYDRANT ASSEMBLY

STA: 1+21.84 WL–E
FIRE HYDRANT ASSEMBLY

STA: 4+23.00 WL–A
INSTALL:
1– 45° BEND

STA: 1+00.00 WL–B
STA: 3+60.26 WL–C
STA: 1+00.00 WL–A
INSTALL:
1– 8"x8" CROSS

STA: 3+90.00 WL–B
STA: 1+00.00 WL–D
INSTALL:
1– 8"x8" TEE

STA: 2+38.41 WL–E
STA: 6+79.98 WL–B
INSTALL:
1– 8"x8" TEE

STA: 4+39.97 WL–A
INSTALL:
1– 45° BEND

STA: 1+37.27 WL–B
FIRE HYDRANT ASSEMBLY

STA: 4+65.91 WL–E
FIRE HYDRANT ASSEMBLY

STA: 3+59.55 WL–D
FIRE HYDRANT ASSEMBLY

STA: 7+93.42 WL–A
FIRE HYDRANT ASSEMBLY

STA: 7+29.81 WL–C
FIRE HYDRANT ASSEMBLY

STA: 8+65.91 WL–E
FIRE HYDRANT ASSEMBLY

STA: 11+16.47 WL–A
INSTALL:
1– 45° BEND

STA: 11+32.74 WL–A
INSTALL:
1– 45° BEND

STA: 12+34.74 WL–A
FIRE HYDRANT ASSEMBLY

STA: 14+56.24 WL–A
STA: 10+60.26 WL–C
INSTALL:
1– 8"x8" TEE

STA: 16+34.74 WL–A
FIRE HYDRANT ASSEMBLY

STA: 17+46.24 WL–A
STA: 8+00.00 WL–D
INSTALL:
1– 8"x8" TEE

STA: 20+36.24 WL–A
STA: 9+38.41 WL–E
INSTALL:
1– 8"x8" TEE

STA: 21+76.89 WL–A
11.25° BEND

STA: 22+76.97 WL–A
11.25° BEND

12" PVC
8" PVC
WATER DOUBLE SERVICE (TYP.)
WATER SINGLE SERVICE (TYP.)

MOO MOO MEADOW (50' R.O.W.)
PEACH GARDENS (50' R.O.W.)
YOSHI FALLS (50' R.O.W.)
BANSHEE BOARDWALK (50' R.O.W.)
SHY GUY FALLS (50' R.O.W.)
KOOPA CAPE RD (60' R.O.W.)

MATCH LINE SEE SHEET 36

CALLED 2.543 ACRES
JSL COMMERCIAL INVESTMENTS, LLC
DOC# 2015001313 OPRWC

CALLED 19.00 ACRES
HILL COUNTRY BIBLE CHURCH LEANDER
DOC# 2013018966 OPRWC

WLH COMMUNITIE
DOC# 2019(

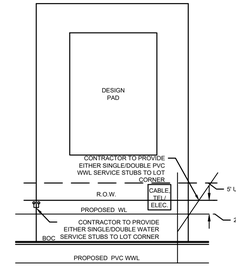
N
W E
S

0 60' 120'
GRAPHIC SCALE 60'

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- PROPOSED WASTEWATER MANHOLE
- PROPOSED WASTEWATER CLEANOUT
- WASTEWATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- PROPOSED TAPPING SLEEVE & VALVE
- IRRIGATION SLEEVE
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING WASTEWATER FORCE MAIN
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTEWATER MANHOLE

NOTES:
1. ALL DIMENSIONS ARE TO CENTERLINE OF PIPE UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTACT ENGINEER IF FIELD CONDITIONS VARY.
3. VALVE STEM RISERS SHALL BE INSTALLED ON ALL VALVES AND PLACED WITHIN 1 FOOT OF FINISHED GRADE.
4. ONE JOINT OF WATER PIPE SHALL BE CENTERED AT ALL WATER/WASTEWATER CROSSINGS, MINIMUM ALLOWABLE CLEARANCE IS 24"
5. ALL WATERLINES TO BE C-900 DR-18 PVC UNLESS OTHERWISE NOTED ON PROFILES.



UTILITY SERVICES STUB DETAIL
NTS

BENCHMARKS

BM #101, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT
- ELEV.= 1002.370' (NAVD '88)

BM #102, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 40.57 ACRE TRACT BELONGING TO UPPER FORTY, LLC
- ELEV.=995.150' (NAVD '88)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2017 KIMLEY–HORN AND ASSOCIATES, INC.
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PHONE: 512–418–1771 FAX: 512–418–1791
WWW.KIMLEY–HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F–928

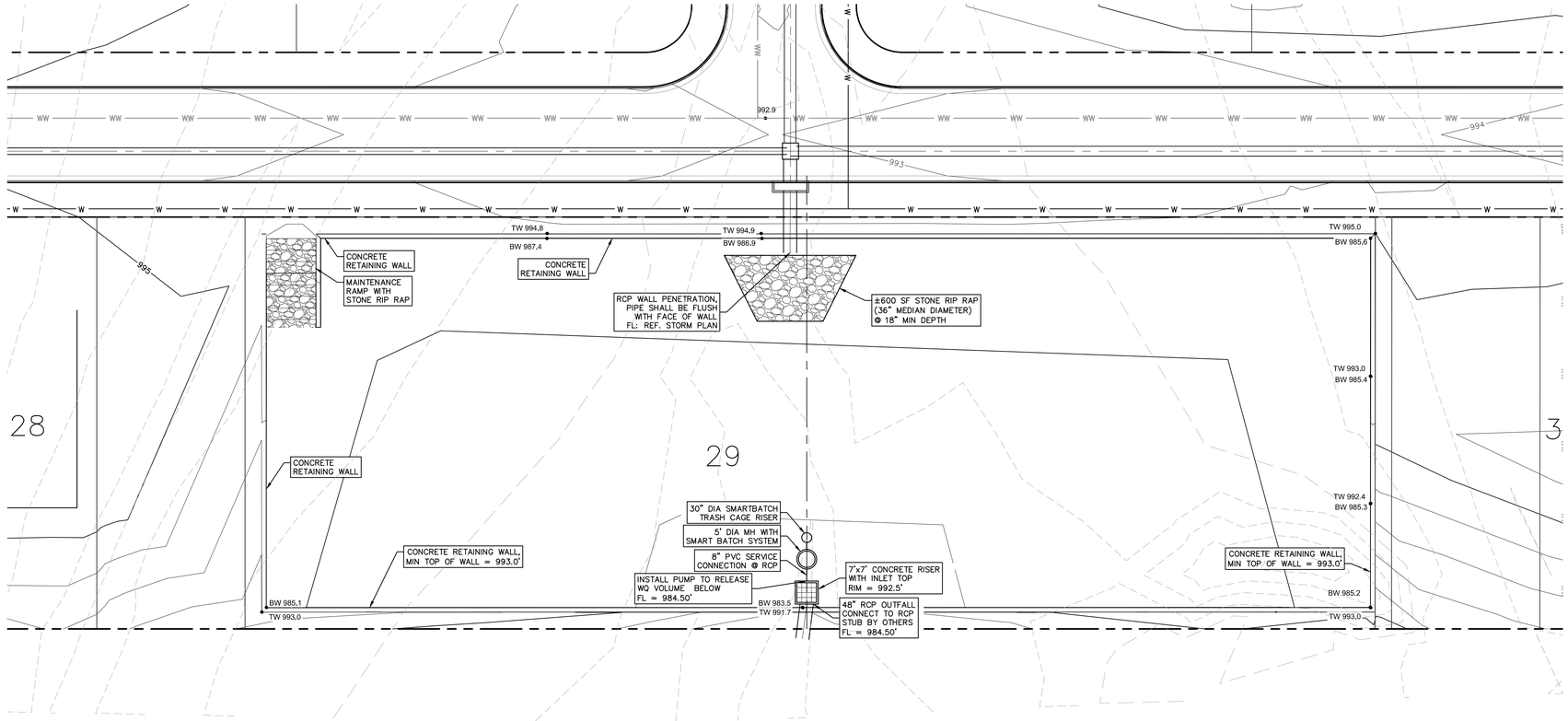
STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED PROFESSIONAL ENGINEER
09–29–2020

KHA PROJECT 069312667
DATE SEPTEMBER 2020
SCALE: AS SHOWN
DESIGNED BY: BG
DRAWN BY: ORB
CHECKED BY: BG

OVERALL WATER PLAN (SHEET 1 OF 2)

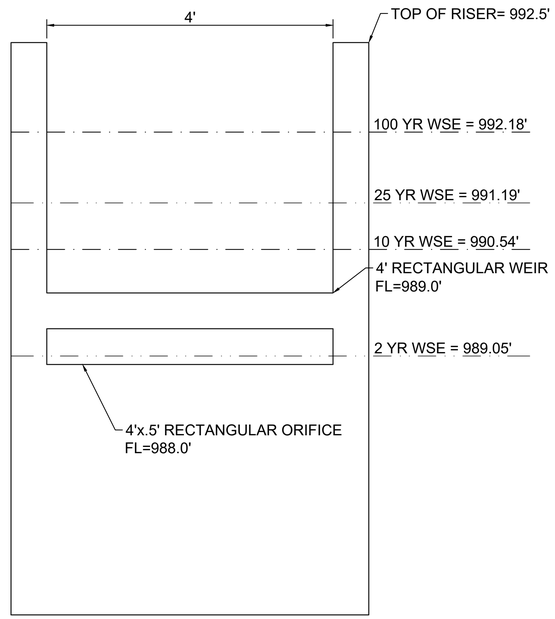
RESERVE AT NORTH FORK
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
35 OF 48

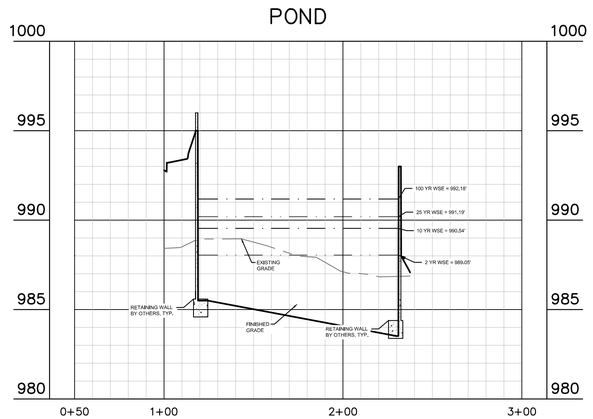


UTILITY LEGEND

	PROPERTY LINE
WW	PROPOSED WASTEWATER LINE
W	PROPOSED WATER LINE
WW	PROPOSED WASTEWATER MANHOLE
	PROPOSED WASTEWATER CLEANOUT
	WASTEWATER FLOW DIRECTION
	PROPOSED FIRE HYDRANT
	PROPOSED TAPPING SLEEVE & VALVE
	IRRIGATION SLEEVE
OHP	EXISTING OVERHEAD POWER LINE
W	EXISTING WATER LINE
FM	EXISTING WASTEWATER FORCE MAIN
	EXISTING STORM SEWER LINE
	EXISTING POWER POLE
	EXISTING FIRE HYDRANT
	EXISTING WATER METER
WW	EXISTING WASTEWATER MANHOLE



OUTLET CONTROL STRUCTURE
N.T.S.
OUTLET STRUCTURE MIRRORED ON 2 SIDES



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STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE:	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

POND PLAN

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
33 OF 48

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: Pulte
Date Prepared: 9/6/2019

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Williamson	
Total project area included in plan * =	30.69	acres
Predevelopment impervious area within the limits of the plan * =	0.02	acres
Total post-development impervious area within the limits of the plan* =	15.64	acres
Total post-development impervious cover fraction * =	0.51	
P =	32	inches
$L_{M\ TOTAL\ PROJECT}$ =	13596	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 1

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = 1

Total drainage basin/outfall area =	30.69	acres
Predevelopment impervious area within drainage basin/outfall area =	0.02	acres
Post-development impervious area within drainage basin/outfall area =	14.55	acres
Post-development impervious fraction within drainage basin/outfall area =	0.47	
$L_{M\ THIS\ BASIN}$ =	12646	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = 91 percent

Aqualogic Cartridge Filter
Bioretention
Contech StormFilter
Constructed Wetland
Extended Detention
Grassy Swale
Retention / Irrigation
Sand Filter
Stormceptor
Vegetated Filter Strips
Vortechs
Wet Basin
Wet Vault

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	30.69	acres
A_I =	15.64	acres
A_P =	15.05	acres
L_R =	15997	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = 12646 lbs.

F = 0.79

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 Pages 3-34 to 3-36

Rainfall Depth =	1.04	inches
Post Development Runoff Coefficient =	0.36	
On-site Water Quality Volume =	42044	cubic feet

Calculations from RG-348 Pages 3-36 to 3-37

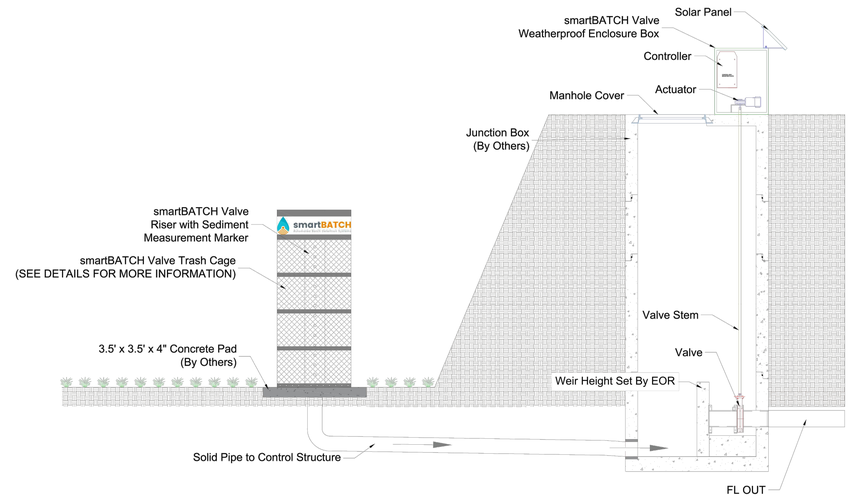
Off-site area draining to BMP =	10.86	acres
Off-site Impervious cover draining to BMP =	4.56	acres
Impervious fraction of off-site area =	0.42	
Off-site Runoff Coefficient =	0.32	
Off-site Water Quality Volume =	12977	cubic feet
Storage for Sediment =	11004	
Total Capture Volume (required water quality volume(s) x 1.20) =	66026	cubic feet

1.51573993

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

22. Batch Detention Basin System Designed as Required in RG-348 Pages 3-46 to 3-51

Required Water Quality Volume for extended detention basin = NA cubic feet



smartBATCH Automated Batch Detention Systems

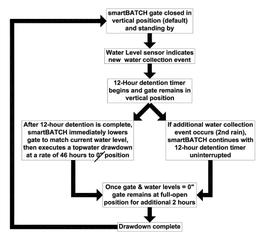
FOR ADDITIONAL INFORMATION CONTACT CONSTRUCTION ECO SERVICES 832-456-1000 www.ecosvs.com

smartBATCH Valve with Control Structure

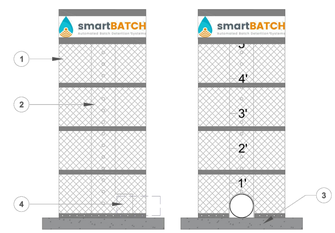
NOTE: ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

REVISION NO. 0 DATE 5/14/2019 SHEET NO.

PROGRAMMABLE LOGIC FLOW CHART



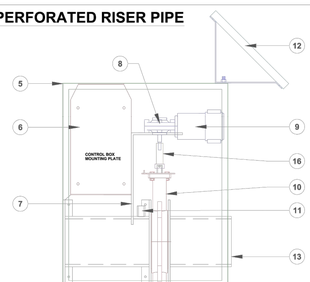
TRASH CAGE WITH PERFORATED RISER PIPE



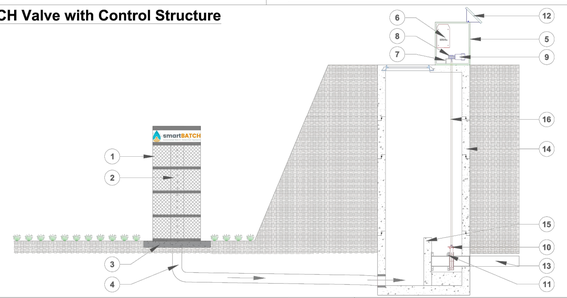
Parts List

Item	smartBATCH Valve Component
1	30" DIAMETER CAGE WITH 1 $\frac{1}{2}$" GALVANIZED MESH SCREEN
2	8" SQUARE PERFORATED TUBING WITH 1" PERFORATION, WITH 4" VERTICAL SPACING ON CENTERS WITH WATER DEPTH MARKER
3	3 $\frac{1}{2}$' X 3 $\frac{1}{2}$' X 4" CONCRETE PAD (BY OTHERS)
4	6" PVC OUTFALL PIPE (BY OTHERS)
5	WEATHERPROOF ELECTRONIC BOX
6	CONTROL BOX
7	PEDESTAL
8	ACTUATOR
9	MOTOR
10	6" VALVE
11	LEVEL TRANSDUCER
12	SOLAR PANEL
13	OUTLET PIPE (BY OTHERS)
14	CONTROL STRUCTURE (BY OTHERS)
15	WEIR (TO BE SIZED BY ENGINEER, BY OTHERS)
16	VALVE STEM

PERFORATED RISER PIPE



smartBATCH Valve with Control Structure



CONSTRUCTION ECO SERVICES

smartBATCH Automated Batch Detention Systems

FOR ADDITIONAL INFORMATION PLEASE CONTACT: CONSTRUCTION ECO SERVICES, 832-456-1000, www.ecosvs.com

CONVERGENT WATER TECHNOLOGIES

No.	REVISIONS	DATE	BY

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HARRISON M. HUDSON
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LICENSED
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09-29-2020

KHA PROJECT 069312667
DATE SEPTEMBER 2020
SCALE: AS SHOWN
DESIGNED BY: BG
DRAWN BY: ORB
CHECKED BY: BG

WATER QUALITY POND DETAILS

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
34 OF 48

CALLED 40.57 ACRES
UPPER FORY, LLC
DOC# 2016031908 OPRWC

29.79 ACRE SURVEY

HERITAGE GROVE ROAD
(PUBLIC R.O.W., WIDTH VARIES)

BROADE STREET
(35' WIDE PUBLIC R.O.W.)

LOT 1, BLOCK A
HERITAGE GROVE COMMERCIAL
DOC# 2018106375 OPRWC

MATCH LINE SEE SHEET 35

STA: 24+43.67 WL-A
FIRE HYDRANT ASSEMBLY

STA: 26+98.47 WL-A
INSTALL:
1- 12"X12" CROSS
1- 8" REDUCER

KOOPA CAPE RD
(50' R.O.W.)

8" PVC

WATER DOUBLE SERVICE (TYP.)

BROADS STREET
(60' R.O.W.)

WL-A

44 45 46 47 48 49 50 51 52

WLH COMMUNITIES TEXAS LLC
DOC# 2019041936

ELECTRIC/TELEPHONE EASEMENT
VOL.2495 PG.140
OPRWC
(NO WIDTH DEFINED)

U.S. HWY 183
(120' WIDE PUBLIC R.O.W.)

CALLED 3.00 ACRES
GREG BRULL
DOC# 2006045358 OPRWC

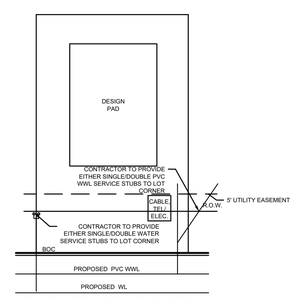
N
W E
S

0 60' 120'
GRAPHIC SCALE 60'

UTILITY LEGEND

	PROPERTY LINE
WW	PROPOSED WASTEWATER LINE
W	PROPOSED WATER LINE
WW	PROPOSED WASTEWATER MANHOLE
	PROPOSED WASTEWATER CLEANOUT
	WASTEWATER FLOW DIRECTION
	PROPOSED FIRE HYDRANT
	PROPOSED TAPPING SLEEVE & VALVE
	IRRIGATION SLEEVE
OHP	EXISTING OVERHEAD POWER LINE
W	EXISTING WATER LINE
FM	EXISTING WASTEWATER FORCE MAIN
	EXISTING STORM SEWER LINE
	EXISTING POWER POLE
	EXISTING FIRE HYDRANT
	EXISTING WATER METER
WW	EXISTING WASTEWATER MANHOLE

NOTES:
1. ALL DIMENSIONS ARE TO CENTERLINE OF PIPE UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTACT ENGINEER IF FIELD CONDITIONS VARY.
3. VALVE STEM RISERS SHALL BE INSTALLED ON ALL VALVES AND PLACED WITHIN 1 FOOT OF FINISHED GRADE.
4. ONE JOINT OF WATER PIPE SHALL BE CENTERED AT ALL WATER/WASTEWATER CROSSINGS, MINIMUM ALLOWABLE CLEARANCE IS 24"
5. ALL WATERLINES TO BE C-900 DR-18 PVC UNLESS OTHERWISE NOTED ON PROFILES.



UTILITY SERVICES STUB DETAIL
NTS

BENCHMARKS

BM #101, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT

- ELEV.=1002.370' (NAVD '88)

BM #102, X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 40.57 ACRE TRACT BELONGING TO UPPER FORTY, LLC

- ELEV.=995.150' (NAVD '88)

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STATE OF TEXAS
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109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

KHA PROJECT 069312667
DATE SEPTEMBER 2020
SCALE: AS SHOWN
DESIGNED BY: BG
DRAWN BY: ORB
CHECKED BY: BG

OVERALL WATER PLAN (SHEET 2 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
36 OF 48

CALLED 31.570 ACRES
DOC# 2018066677 OPRWC

CALLED 44.385 ACRE TRACT OF LAND
VOL. 2018, PG. 891 OPRWC

STA: 9+02.87 WWL–F
CONSTRUCT STUB OUT
FOR FUTURE CONNECTION

STA: 9+06.74 WWL–E
CONSTRUCT STUB OUT
FOR FUTURE CONNECTION

STA. 12+70 WWL–C
4' MANHOLE
RIM: 1000.16
FL 12" OUT(S) 989.90
FL 12" IN(E) 989.90

WASTEWATER DOUBLE SERVICE (TYP.)

WWL-B SEE SHEET 39

STA. 7+45 WWL–F
STA. 1+00.00 WWL–B
INSTALL 4' MANHOLE
FL 8" OUT(S) 992.49
FL 8" OUT(N) 992.59
FL 8" IN(E) 994.06

8" PVC

WASTEWATER DOUBLE SERVICE (TYP.)

STA. 7+45 WWL–D
4' MANHOLE
RIM: 998.65
FL 8" OUT(S) 992.24
FL 8" OUT(E) 992.34

STA. 8+86.40 WWL–E
4' MANHOLE
RIM: 999.91
FL 8" OUT(S) 989.78
FL 8" OUT(N) 989.88

12" PVC

STA. 14+77 WWL–C
4' MANHOLE
RIM: 1000.24
FL 12" OUT(W) 990.93

WASTEWATER SINGLE SERVICE (TYP.)

WWL-B SEE SHEET 39

STA. 3+32 WWL–B
4' MANHOLE
RIM: 999.26
FL 8" OUT(W) 995.22

STA. 9+57 WWL–D
4' MANHOLE
RIM: 999.58
FL 8" IN(W) 994.91

WASTEWATER SINGLE SERVICE (TYP.)

WASTEWATER DOUBLE SERVICE (TYP.)

STA. 9+86.90 WWL–C
4' MANHOLE
RIM: 997.98
FL 12" OUT(S) 988.48
FL 12" IN(N) 988.48

STA. 4+71.37 WWL–F
4' MANHOLE
RIM: 996.63
FL 8" OUT(S) 989.37
FL 8" IN(N) 989.47

STA. 4+68.74 WWL–D
4' MANHOLE
RIM: 996.53
FL 8" OUT(S) 988.78
FL 8" IN(N) 988.88

STA. 5+00 WWL–E
4' MANHOLE
RIM: 998.02
FL 8" OUT(S) 987.75
FL 8" IN(N) 987.85

WWL-C SEE SHEET 40

WWL-F SEE SHEET 41

WWL-D SEE SHEET 41

WWL-E SEE SHEET 41

EXISTING FORCE MAIN

EXISTING WASTEWATER LINE

STA. 6+25 WWL–C
4' MANHOLE
RIM: 995.02
FL 12" OUT(E) 986.67
FL 12" IN(N) 986.67

STA. 3+45 WWL–C
4' MANHOLE
RIM: 992.93
FL 12" OUT(E) 982.96
FL 12" IN(W) 985.27
FL 8" IN(N) 985.28

WWL-A SEE SHEET 39

STA. 11+19.96 WWL–A
STA. 1+00.00 WWL–D
INSTALL 4' MANHOLE
FL 12" OUT(W) 984.20
FL 12" IN(E) 984.20
FL 8" IN(N) 984.30

STA. 8+29.96 WWL–A
STA. 1+00.00 WWL–E
INSTALL 4' MANHOLE
FL 12" OUT(W) 985.65
FL 12" IN(E) 985.65
FL 8" IN(N) 985.75

STA. 5+67.15 WWL–A
4' MANHOLE
RIM: 997.08
FL 12" OUT(SW) 986.96
FL 12" IN(NE) 986.96

STA. 6+61.81 WWL–A
4' MANHOLE
RIM: 996.60
FL 12" OUT(W) 986.49
FL 12" IN(NE) 986.49

WWL-F SEE SHEET 42

WASTEWATER SINGLE SERVICE (TYP.)

WASTEWATER DOUBLE SERVICE (TYP.)

MATCH LINE SEE SHEET 38

CALLED 2.543 ACRES
JSL COMMERCIAL
INVESTMENTS, LLC
DOC# 2015001313 OPRWC

CALLED 19.00 ACRES
HILL COUNTRY BIBLE CHURCH LEANDER
DOC# 2013018966 OPRWC

ENCLAVE AT MAYA
DOC# 2017036058 O

N
W E
S

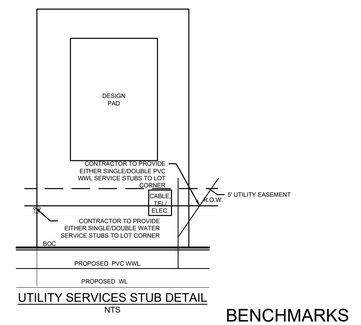
0 40' 80'
GRAPHIC SCALE 40'

UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- WATER LINE
- PROPOSED WASTE WATER MANHOLE
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- EXISTING OVERHEAD POWER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

NOTES

1. ALL DIMENSIONS ARE TO CENTERLINE OF PIPE UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTACT ENGINEER IF FIELD CONDITIONS VARY FROM APPROVED CONSTRUCTION DOCUMENTS.
3. ELECTRIC AND GAS SERVICE SHOWN IS CONCEPTUAL. FINAL DESIGN TO BE COORDINATED WITH GEORGETOWN ELECTRIC & ATMOS ENERGY.
4. PROPOSED WASTEWATER MANHOLES OUTSIDE OF PAVED AREAS REQUIRE BOLTED MANHOLE COVERS.
5. ALL PROPOSED WASTEWATER MANHOLES TO INCLUDE WATER TIGHT CAP INTERNAL TO MANHOLE.
6. ALL WASTEWATER MAINS SHALL BE EMBEDDED IN CEMENT STABILIZED SAND AT ALL WATER CROSSINGS FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
7. THE USE OF PIPES AND PIPE FITTINGS THAT CONTAIN MORE THAN 0.25% LEAD OR SOLDERS AND FLUX THAT CONTAINS MORE THAN 0.2% LEAD IS PROHIBITED PURSUANT TO 30 TEXAS ADMINISTRATIVE CODE (TAC) §290.44(B)(1).
8. ALL UTILITY CROSSINGS NEED TO MAINTAIN MINIMUM 24" VERTICAL CLEARANCE FOR STORM SEWER AND WATER UNLESS SPECIFIED ON APPROVED CONSTRUCTION DOCUMENTS..
9. CENTER ONE JOINT OF PIPE ON ALL WATER & WASTEWATER CROSSINGS.
10. WASTEWATER MANHOLES SHALL BE CORED, BOOTED, GROUTED, AND RECOATED TO CITY OF GEORGETOWN STANDARDS.



UTILITY SERVICES STUB DETAIL
NTS

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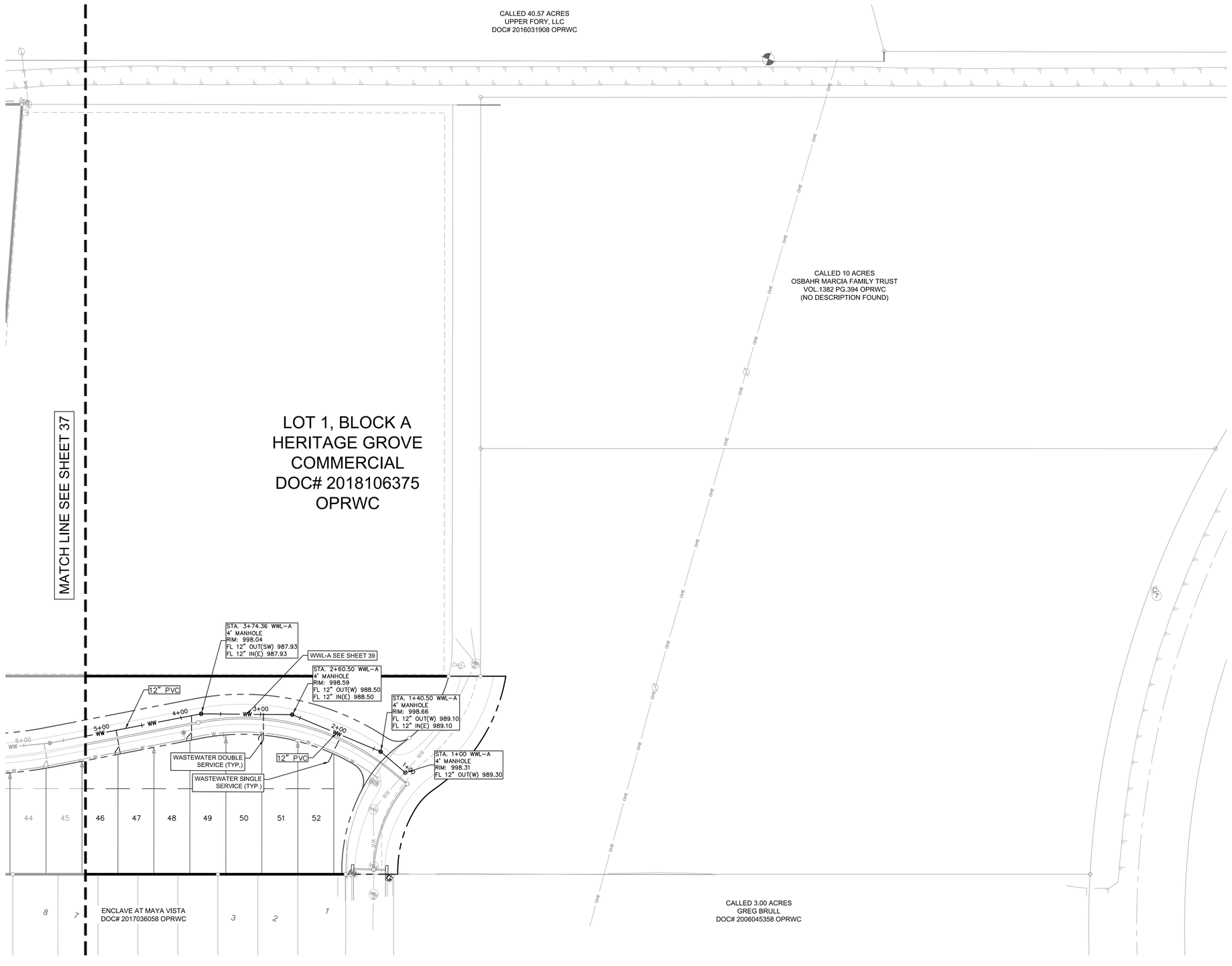
OVERALL WASTEWATER PLAN (SHEET 1 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
37 OF 48

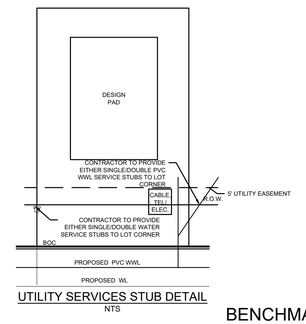


UTILITY LEGEND

- PROPERTY LINE
- PROPOSED WASTE WATER LINE
- WATER LINE
- PROPOSED WASTE WATER MANHOLE
- WASTE WATER FLOW DIRECTION
- PROPOSED FIRE HYDRANT
- EXISTING OVERHEAD POWER LINE
- EXISTING WASTE WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WASTE WATER MANHOLE

NOTES

1. ALL DIMENSIONS ARE TO CENTERLINE OF PIPE UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTACT ENGINEER IF FIELD CONDITIONS VARY FROM APPROVED CONSTRUCTION DOCUMENTS.
3. ELECTRIC AND GAS SERVICE SHOWN IS CONCEPTUAL, FINAL DESIGN TO BE COORDINATED WITH GEORGETOWN ELECTRIC & ATMOS ENERGY.
4. PROPOSED WASTEWATER MANHOLES OUTSIDE OF PAVED AREAS REQUIRE BOLTED MANHOLE COVERS.
5. ALL PROPOSED WASTEWATER MANHOLES TO INCLUDE WATER TIGHT CAP INTERNAL TO MANHOLE.
6. ALL WASTEWATER MAINS SHALL BE EMBEDDED IN CEMENT STABILIZED SAND AT ALL WATER CROSSINGS FOR THE TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12 INCHES BEYOND THE JOINT ON EACH END.
7. THE USE OF PIPES AND PIPE FITTINGS THAT CONTAIN MORE THAN 0.25% LEAD OR SOLDERS AND FLUX THAT CONTAINS MORE THAN 0.2% LEAD IS PROHIBITED PURSUANT TO 30 TEXAS ADMINISTRATIVE CODE (TAC) §290.44(B)(1).
8. ALL UTILITY CROSSINGS NEED TO MAINTAIN MINIMUM 24" VERTICAL CLEARANCE FOR STORM SEWER AND WATER UNLESS SPECIFIED ON APPROVED CONSTRUCTION DOCUMENTS..
9. CENTER ONE JOINT OF PIPE ON ALL WATER & WASTEWATER CROSSINGS.
10. WASTEWATER MANHOLES SHALL BE CORED, BOOTED, GROUTED, AND RECOATED TO CITY OF GEORGETOWN STANDARDS.



UTILITY SERVICES STUB DETAIL
NTS

BENCHMARKS

BM #101. X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT

- ELEV.=1002.370' (NAVD '88)

BM #102. X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 40.57 ACRE TRACT BELONGING TO UPPER FORTY, LLC

- ELEV.=995.150' (NAVD '88)

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2017 KIMLEY-HORN AND ASSOCIATES, INC.
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PHONE: 512-418-1771 FAX: 512-418-1791
WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

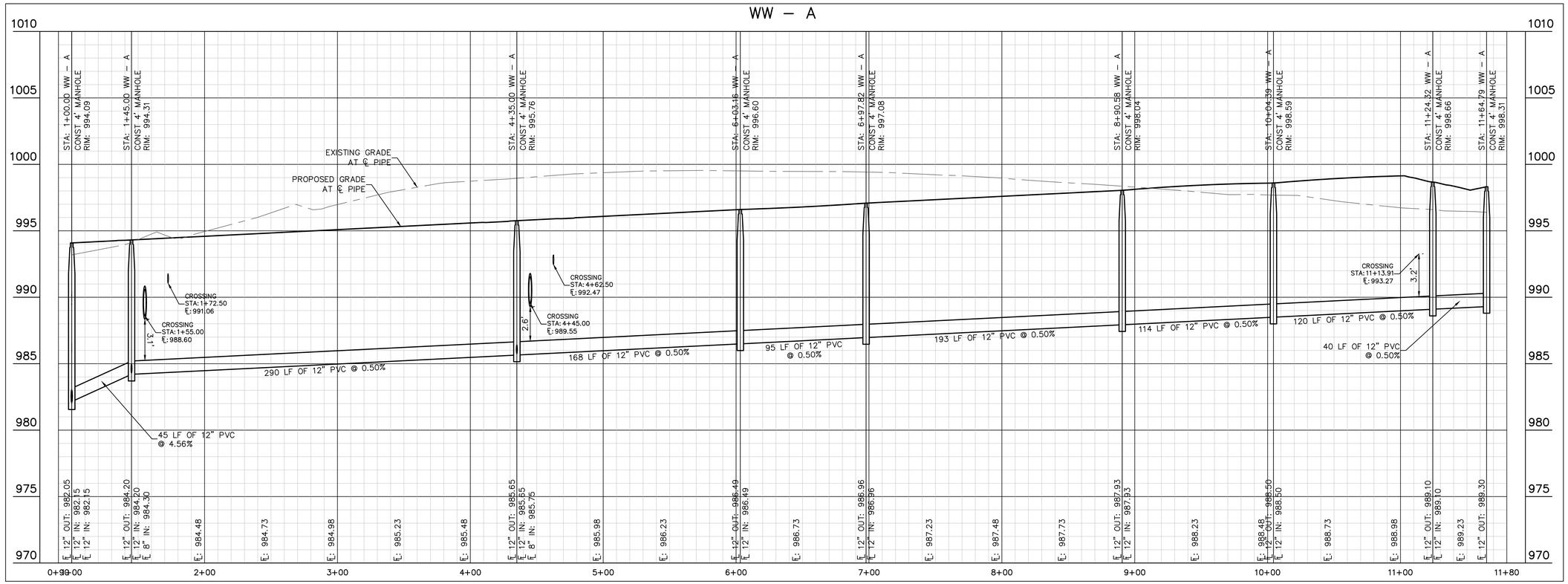
KHA PROJECT 069312667	DATE SEPTEMBER 2020	SCALE AS SHOWN	DESIGNED BY: BG	DRAWN BY: ORB	CHECKED BY: BG

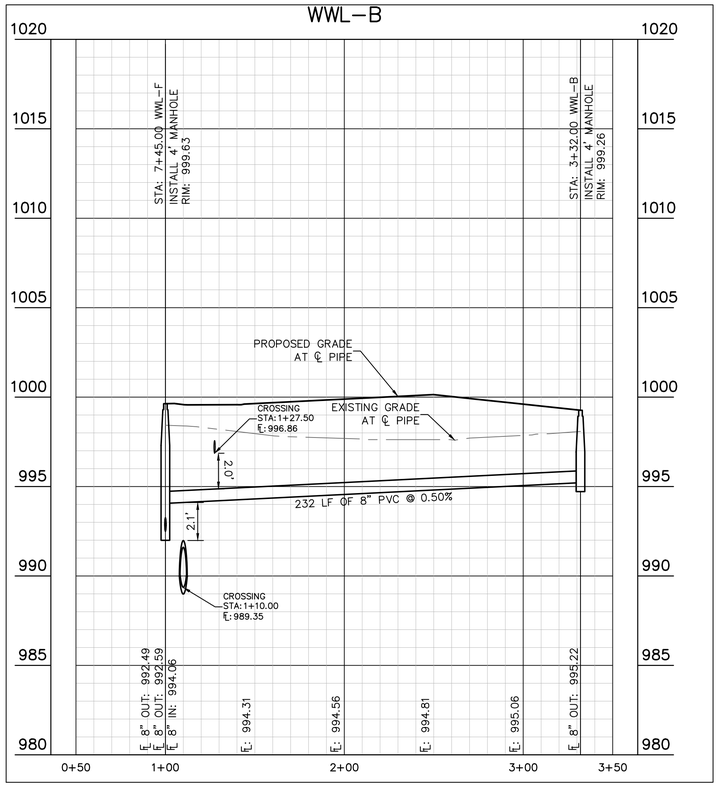
OVERALL WASTEWATER PLAN (SHEET 2 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
38 OF 48





PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL

No.	REVISIONS	DATE	BY

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09-29-2020

KHA PROJECT 069312667
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SCALE: AS SHOWN
DESIGNED BY: BG
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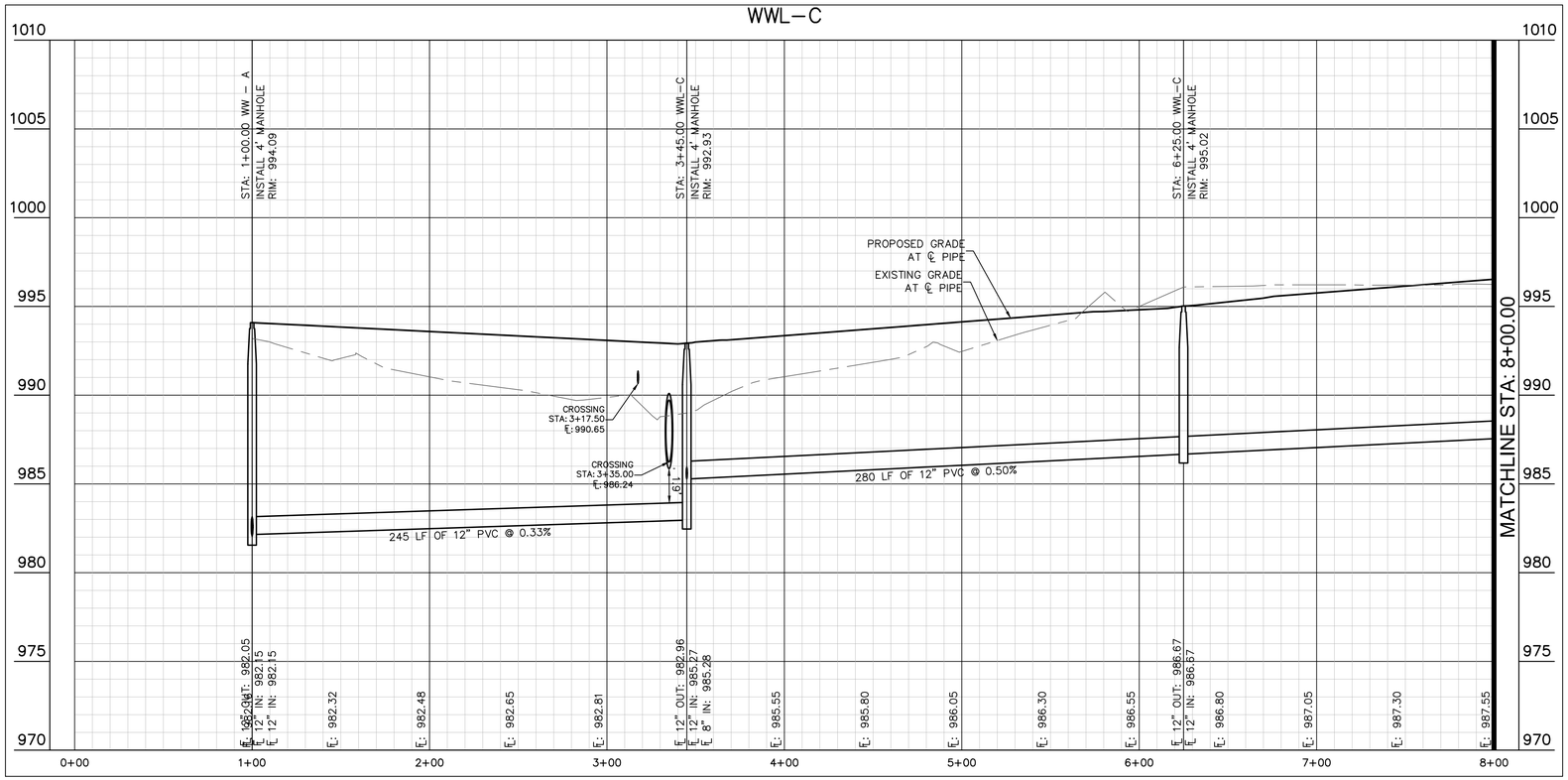
CHECKED BY: BG

WASTEWATER PROFILES (SHEET 1 OF 4)

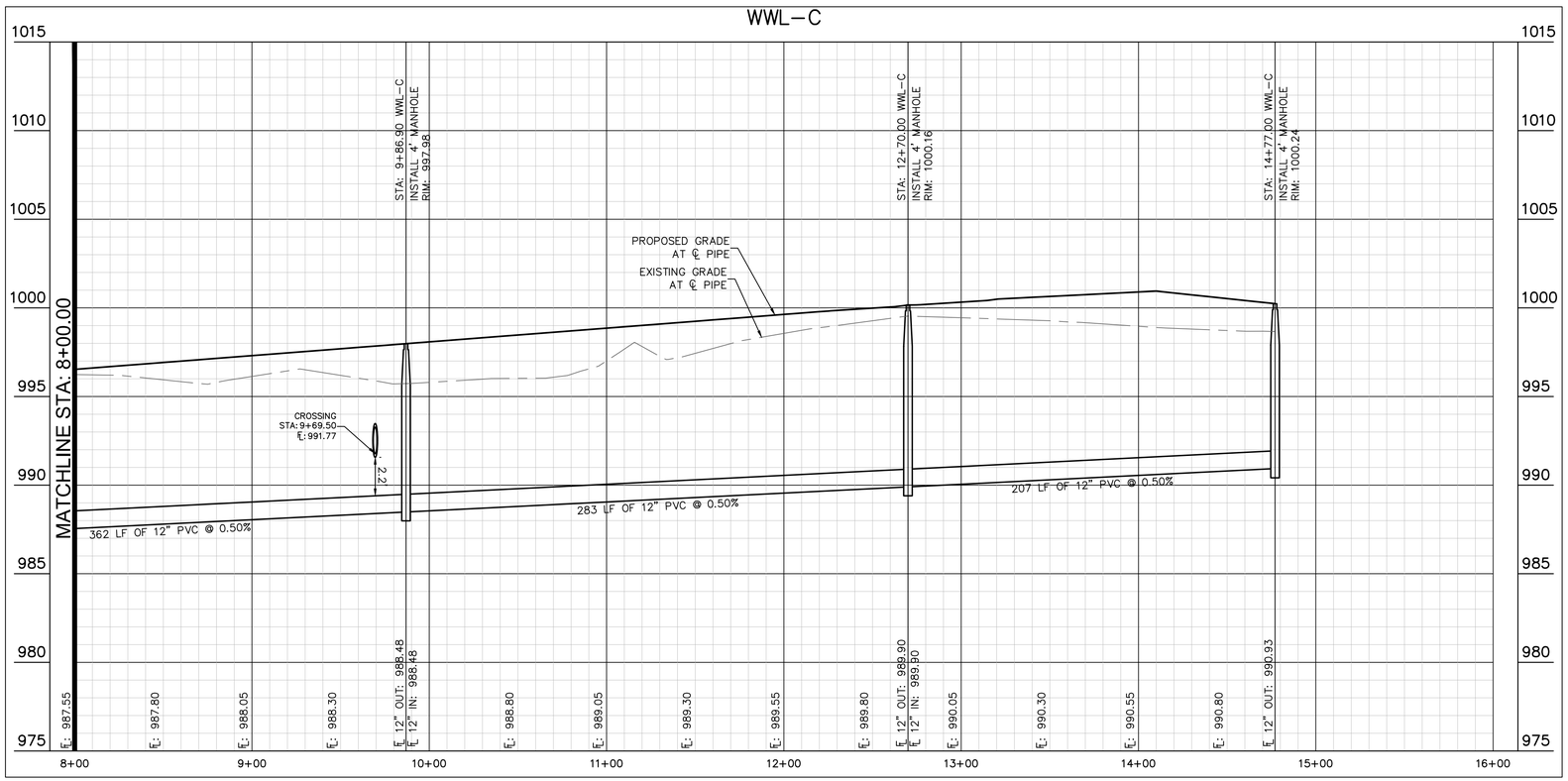
RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
39 OF 48



PROFILE SCALE
1" = 40' HORIZONTAL
1" = 4' VERTICAL



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09–29–2020

KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE: AS SHOWN	
DESIGNED BY:	BG
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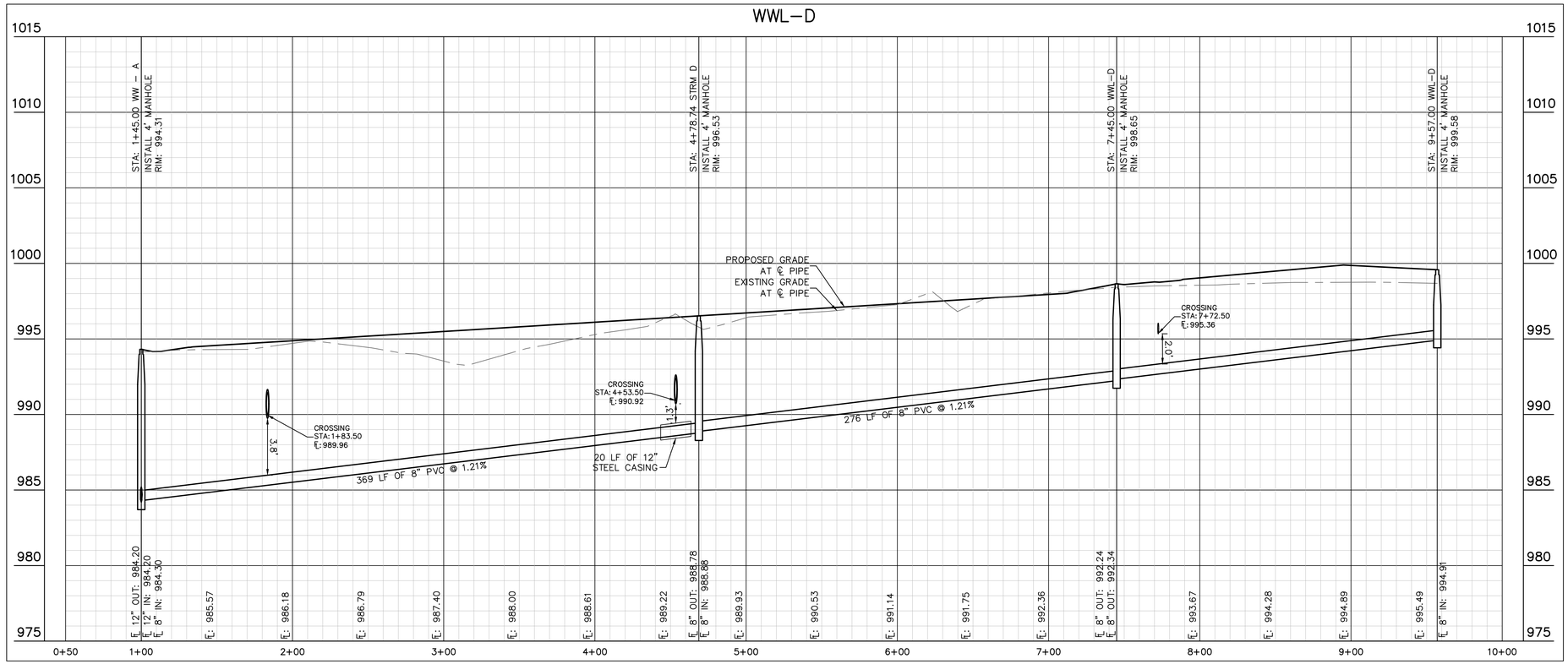
CHECKED BY:	BG

WASTEWATER PROFILES (SHEET 2 OF 4)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
40 OF 48



PROFILE SCALE
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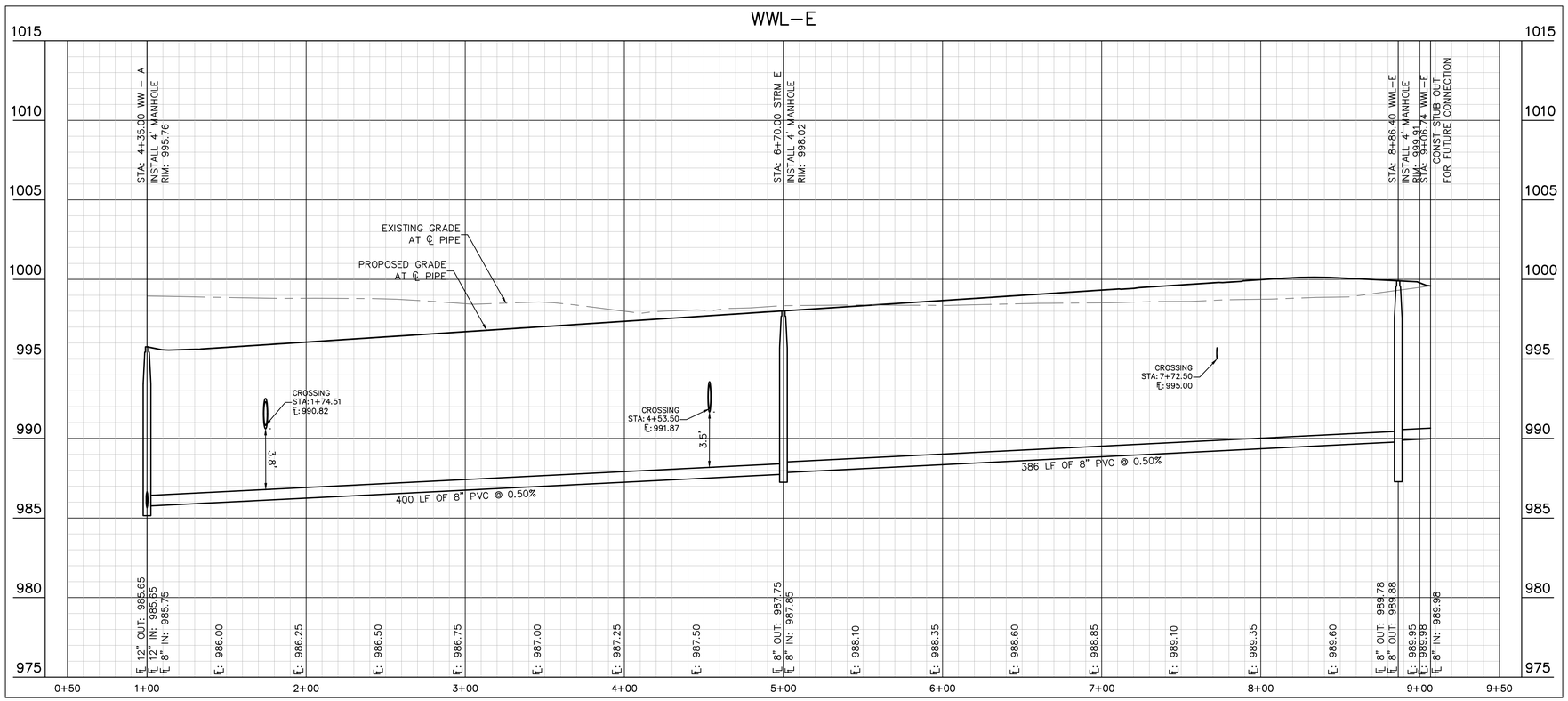
1" = 4' VERTICAL



PROFILE SCALE
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09-29-2020

KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE:	AS SHOWN
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DRAWN BY:	ORB
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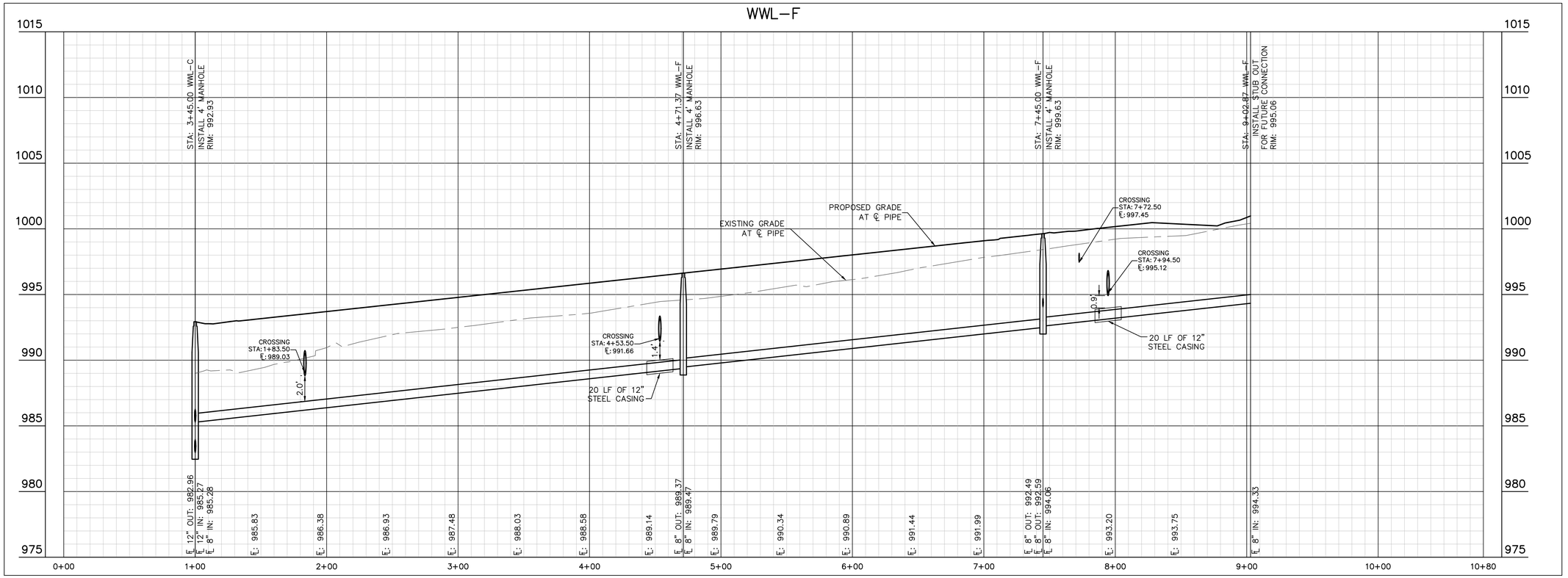
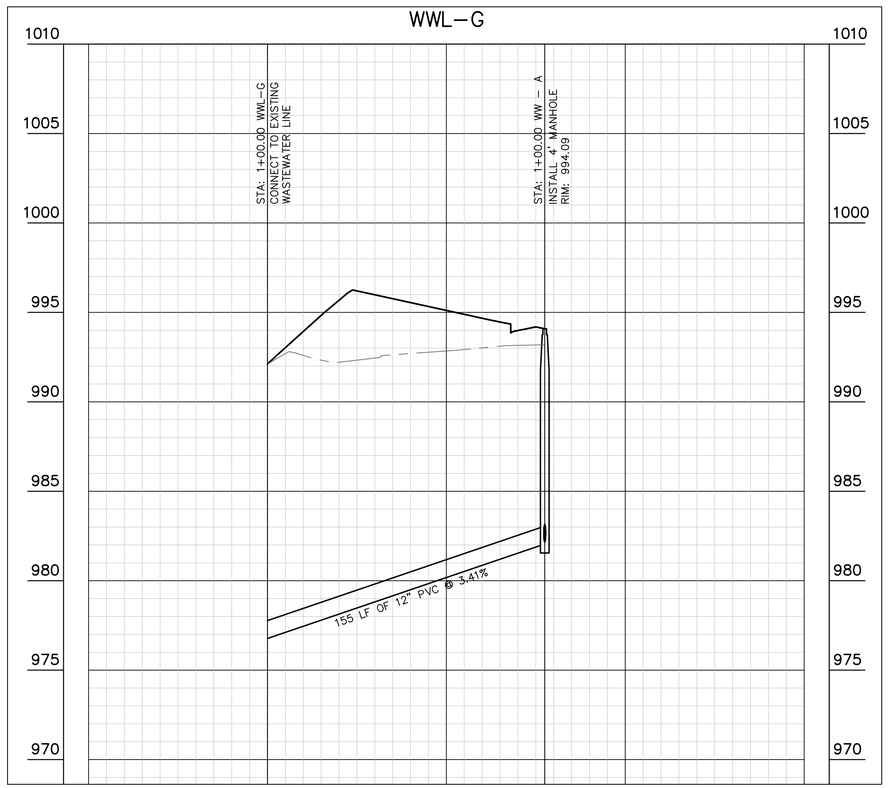
WASTEWATER PROFILES (SHEET 3 OF 4)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
41 OF 48





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09–29–2020

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WASTEWATER PROFILES (SHEET 4 OF 4)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
42 OF 48

CALLED 31.570 ACRES
DOC# 2018066677 OPRWC

CALLED 44.385 ACRE TRACT OF LAND
VOL. 2018, PG. 891 OPRWC

MOO MOO MEADOWS (50' R.O.W.)

PEACH GARDENS (50' R.O.W.)

YOSHI FALLS (50' R.O.W.)

BANSHEE BOARDWALK (50' R.O.W.)

SHY GUY FALLS (50' R.O.W.)

KOOPA CAPE RD (50' R.O.W.)

INSTALL STREET LIGHT (TYP.)

INSTALL STOP SIGN, STOP BAR, AND D3-1 SIGN (TYP)

MATCH LINE SEE SHEET 44

CALLED 2.543 ACRES
JSL COMMERCIAL
INVESTMENTS, LLC
DOC# 2015001313 OPRWC

CALLED 19.00 ACRES
HILL COUNTRY BIBLE CHURCH LEANDER
DOC# 2013018966 OPRWC

ENCLAVE
DOC# 2017

N
W
E
S

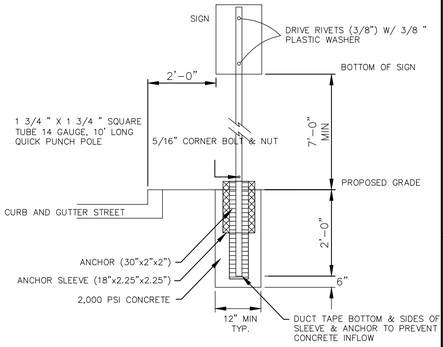
0 40' 80'
GRAPHIC SCALE 40'

LEGEND

- PROPERTY LINE
- STREET LIGHT
- STOP SIGN (R1-1) AND STOP BAR (TYP.)
- STREET NAME SIGN
- 4' SIDEWALK (IN THIS CONTRACT)
- 4' SIDEWALK (NOT IN THIS CONTRACT)
- CLUSTERED DRIVEWAY LOTS PER AMOC
- FIRE HYDRANT PAVEMENT MARKER
- FIRE HYDRANT

NOTES:

1. STOP SIGNS (R1-1) ARE SHOWN FOR SCHEMATIC PURPOSES ONLY, SEE DETAIL SHEET FOR PLACEMENT.
2. STREET NAME SIGNS SHOULD MEET THE REQUIREMENTS OF CITY OF AUSTIN STANDARD #824-2.
3. CONTRACTOR TO SEE BLUEBONNET ELECTRIC STREET LIGHT PLAN FOR STREET LIGHT LOCATIONS.
4. ALL STOP BARS TO CONFORM TO TMUTCD STANDARDS FOR LOCATIONS AND DIMENSIONS AND THERMOPLASTIC STRIPING.
5. CROSS HATCHED STRIPING TO BE WHITE AND 4 INCHES WIDE WITH 10 FOOT SPACING (PER TMUTCD STANDARDS FOR THERMOPLASTIC STRIPING).
6. ALL NATURE TRAILS TO CONFORM TO CITY OF AUSTIN STANDARD 1301S-1.
7. SIDEWALKS IN THE ROW MAY BE CONSIDERED PART OF THE NATURE TRAIL ROUTE, RATHER THAN ROADWAY EMBANKMENT.



SIGN POST DETAIL
NTS

BENCHMARKS

BM #101: X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 44.385 ACRE TRACT

- ELEV.=1002.370' (NAVD '88)

BM #102: X CUT INTO HEADWALL ON THE NORTHERN RIGHT OF WAY LINE OF HERITAGE GROVE ROAD IN FRONT OF A CALLED 40.57 ACRE TRACT BELONGING TO UPPER FORTY, LLC

- ELEV.=995.150' (NAVD '88)

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09-29-2020

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STREET LIGHT & SIGN PLAN (SHEET 1 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
43 OF 48

CALLED 40.57 ACRES
UPPER FORY, LLC
DOC# 2016031908 OPRWC

MATCH LINE SEE SHEET 43

LOT 1, BLOCK A
HERITAGE GROVE
COMMERCIAL
DOC# 2018106375
OPRWC

CALLED 10 ACRES
OSBAHR MARCIA FAMILY TRUST
VOL.1382 PG.394 OPRWC
(NO DESCRIPTION FOUND)

KOOPA CAPE RD
(50' R.O.W.)

BROADER STREET
(60' R.O.W.)

INSTALL STREET LIGHT (TYP)

INSTALL STOP SIGN, STOP BAR, AND D3-1 SIGN (TYP)

INSTALL STREET LIGHT (TYP)

44 45 46 47 48 49 50 51 52

8 7 2 1

ENCLAVE AT MAYA VISTA
DOC# 2017036058 OPRWC

CALLED 3.00 ACRES
GREG BRULL
DOC# 2006045358 OPRWC

N
W E
S

0 40' 80'
GRAPHIC SCALE 40'

LEGEND

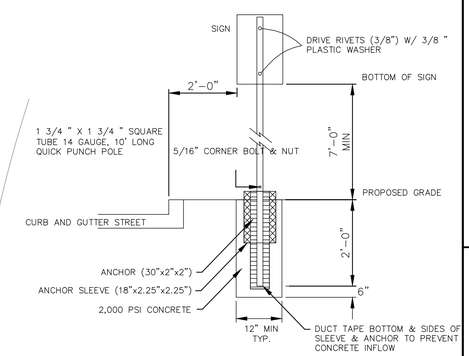
- PROPERTY LINE
- STREET LIGHT
- STOP SIGN (R1-1) AND STOP BAR (TYP.)
- STREET NAME SIGN
- 4' SIDEWALK (IN THIS CONTRACT)
- 4' SIDEWALK (NOT IN THIS CONTRACT)
- CLUSTERED DRIVEWAY LOTS PER AMOC
- FIRE HYDRANT PAVEMENT MARKER
- FIRE HYDRANT

NOTES:

1. STOP SIGNS (R1-1) ARE SHOWN FOR SCHEMATIC PURPOSES ONLY, SEE DETAIL SHEET FOR PLACEMENT.
2. STREET NAME SIGNS SHOULD MEET THE REQUIREMENTS OF CITY OF AUSTIN STANDARD #824-2.
3. CONTRACTOR TO SEE BLUEBONNET ELECTRIC STREET LIGHT PLAN FOR STREET LIGHT LOCATIONS.
4. ALL STOP BARS TO CONFORM TO TMUTCD STANDARDS FOR LOCATIONS AND DIMENSIONS AND THERMOPLASTIC STRIPING.
5. CROSS HATCHED STRIPING TO BE WHITE AND 4 INCHES WIDE WITH 10 FOOT SPACING (PER TMUTCD STANDARDS FOR THERMOPLASTIC STRIPING).
6. ALL NATURE TRAILS TO CONFORM TO CITY OF AUSTIN STANDARD 1301S-1.
7. SIDEWALKS IN THE ROW MAY BE CONSIDERED PART OF THE NATURE TRAIL ROUTE, RATHER THAN ROADWAY EMBANKMENT.

STOP
R1-1

SPEED LIMIT 30
R2-1



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109973
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09-29-2020

KHA PROJECT	069312667
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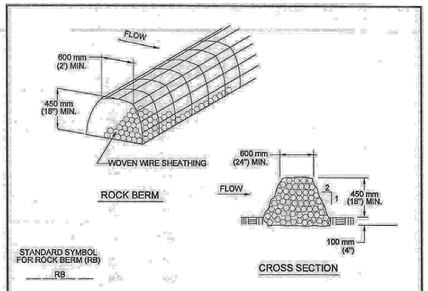
SCALE:	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

STREET LIGHT & SIGN PLAN (SHEET 2 OF 2)

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

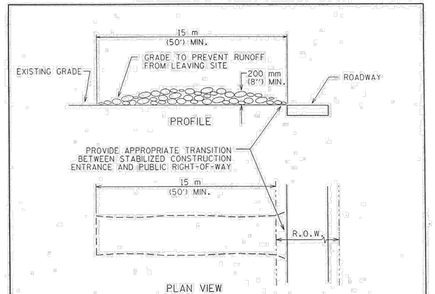
SHEET NUMBER
44 OF 48



NOTES:

1. USE ONLY OPEN GRADED ROCK 75 to 125 mm (3 to 5") DIAMETER FOR ALL CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 25 mm (1") OPENING AND MINIMUM WIRE DIAMETER OF 12.9 mm (20 GAUGE).
3. THE ROCK BERM SHALL BE INSPECTED DAILY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SEDIMENT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. IF SEDIMENT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 150 mm (6"), WHICHEVER IS LESS, THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SEDIMENTION PROBLEM.
5. WHEN THE SITE IS COMPLETELY STABILIZED,THE BERM AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

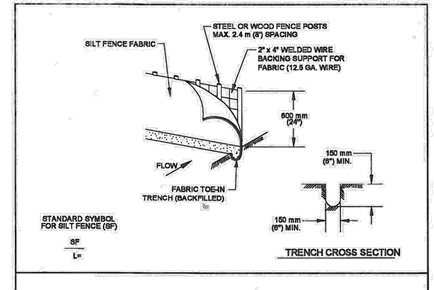
CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	ROCK BERM	
8/24/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 639S-1



NOTES:

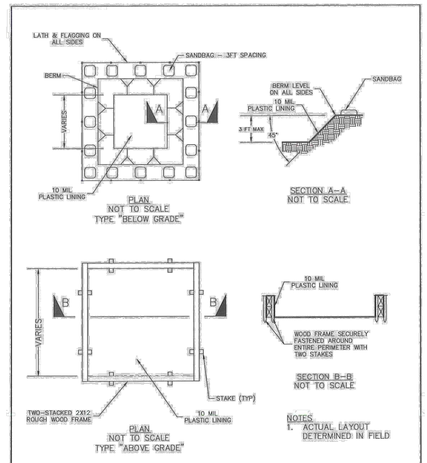
1. STONE SIZE: 75-125 mm (3-5") OPEN GRADED ROCK.
2. LENGTH AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STABILIZED CONSTRUCTION ENTRANCE	
5/23/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 641S-1



1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.
3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	SILT FENCE	
9/1/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 642S-1



1. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
2. FENCES SHALL COMPLETELY SURROUND THE TREE, OR CLUSTERS OF TREES; SHALL BE LOCATED AT THE OUTERMOST LIMIT OF THE TREE BRANCHES (DRIPLINE), AND SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT IN ORDER TO PREVENT THE FOLLOWING:
   A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MATERIALS.
   B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN SIX INCHES (6") CUT OR FILL, OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY.
   C. WOUNDS TO EXPOSED ROOTS, TRUNKS OR LIMBS BY MECHANICAL EQUIPMENT,
   D. OTHER ACTIVITIES DETRIMENTAL TO TREES, SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING AND FIRE.
3. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIPLINES MAY BE PERMITTED IN THE FOLLOWING CASES:
   A. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.
   B. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN SIX FEET (6'-0") TO BUILDING.
4. CRITICAL ROOT ZONE REQUIREMENTS
   A. NO CONSTRUCTION OR DISTURBANCE SHALL OCCUR WITHIN AN AREA THAT CONSTITUTES MORE THAN FIFTY (50%) OF THE TOTAL CRITICAL ROOT ZONE AND ONE HALF THE RADIAL DISTANCE OF THE CRITICAL ROOT ZONE FOR EACH TREE BEING PRESERVED INCLUDING SIGNIFICANT TREES, HERITAGE TREES, AND ANY OTHER TREES FOR WHICH PRESERVATION IS TO BE CREDITED. THE REMAINING CRITICAL ROOT ZONE SHALL CONSIST OF AT LEAST ONE HUNDRED (100) SQUARE FEET.
   B. THIS DEFINED AREA SHALL BE FLAGGED AND ENCIRCLED WITH PROTECTIVE FENCING DURING CONSTRUCTION. THE PLANNING DIRECTOR MAY APPROVE CONSTRUCTION CLOSER TO THE TRUNK THAN ONE HALF (½) THE RADIAL DISTANCE, DEPENDING ON THE SIZE, SPACING, OR SPECIES OF THE TREE, THE TYPE OF DISTURBANCE PROPOSED, AND UNIQUENESS OF THE SITUATION.
   C. CUT OR FILL THAT IS GREATER THAN FOUR (4) INCHES IN DEPTH AND THE SEVERING OF MAJOR ROOTS SHALL BE CONSIDERED DISTURBANCE FOR THE PURPOSES OF THIS ORDINANCE.
   D. WITHIN THE PROTECTED CRITICAL ROOT ZONE, ONLY FLATWORK, DECKING, OR SIMILAR CONSTRUCTION, MAY BE APPROVED AND SHALL NOT AFFECT THE BRANCHING OF THE TREE.
   E. IF PROPOSED OR ACTUAL PROTECTION OF THE CRITICAL ROOT ZONE OF A TREE DOES NOT MEET THE REQUIREMENTS OF THIS SECTION, THEN THE TREE SHALL BE CONSIDERED REMOVED AND SHALL REQUIRE MITIGATION IN ACCORDANCE WITH THIS ORDINANCE.

NOTES:

1. INSTALL 4" DIAMETER STAINLESS STEEL "NO DUMPING – DRAINS TO CREEK" MARKER, FACTORY PAINTED BLUE AS SHOWN, 2" ABOVE VERTICAL FACE OF INLET AT MIDPOINT OF ALL INLETS.
2. MARKER SHALL BE AFFIXED TO SURFACE WITH ADHESIVE PER MANUFACTURER'S RECOMMENDATIONS.
3. MARKER SHALL BE MANUFACTURED BY ALMATEK INDUSTRIES OR APPROVED EQUAL:
   ALMATEK INDUSTRIES, INC.
   2 JOY DRIVE
   HACKETTSTOWN, NJ 07840
   (800) 248-2080
   WWW.ALMATEK.COM

No.	REVISIONS	DATE	BY

Kimley»Horn
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10814 JOLLYVILLE ROAD, AVALLON IV, SUITE 300, AUSTIN, TX 78759
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WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
HARRISON M. HUDSON
109973
LICENSED
PROFESSIONAL ENGINEER
09-29-2020

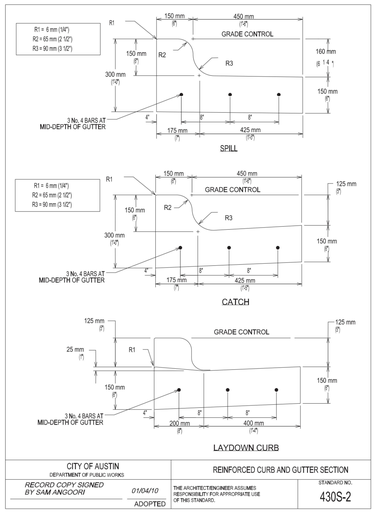
KHA PROJECT 069312667	DESIGNED BY:	BG
DATE SEPTEMBER 2020	DRAWN BY:	ORB
SCALE: AS SHOWN	CHECKED BY:	BG

EROSION CONTROL DETAILS

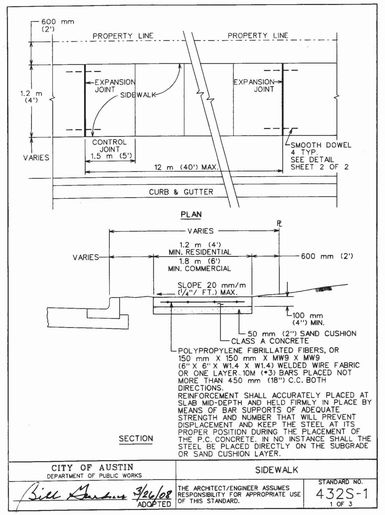
RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

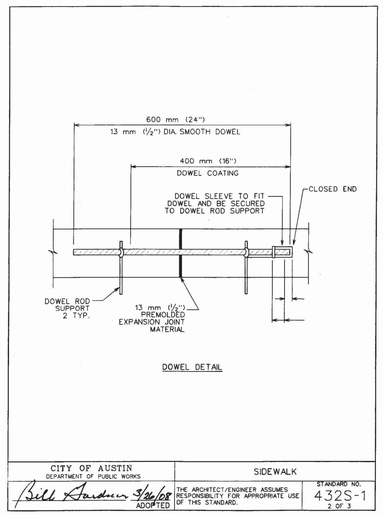
SHEET NUMBER
45 OF 48



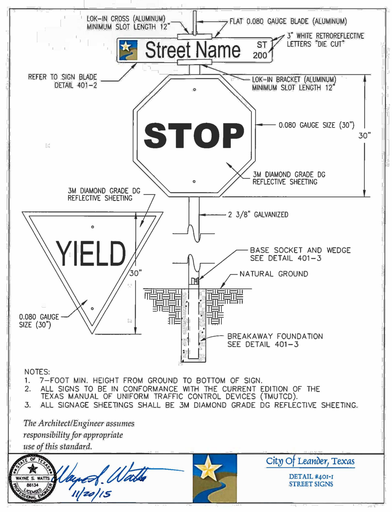
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	REINFORCED CURB AND GUTTER SECTION
RECORD COPY SIGNED BY SAM ANGOORI 01/04/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 430S-2



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SIDEWALK
Bill Gardner 3/26/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 432S-1 1 OF 3



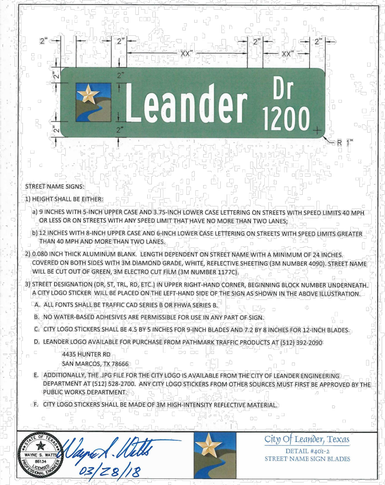
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SIDEWALK
Bill Gardner 3/26/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 432S-1 2 OF 3



The Architect/Engineer assumes responsibility for appropriate use of this standard.

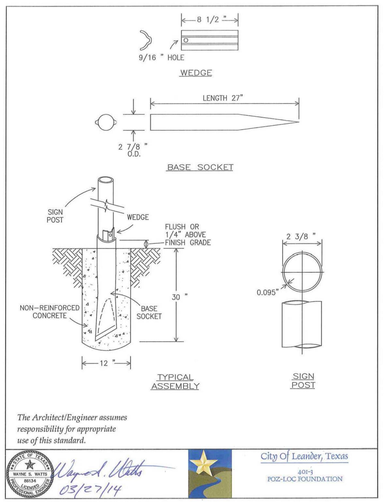
Wayne S. Watts 86124 11/20/15

City Of Leander, Texas DETAIL #401-1 STREET SIGNS



Wayne S. Watts 86124 03/28/18

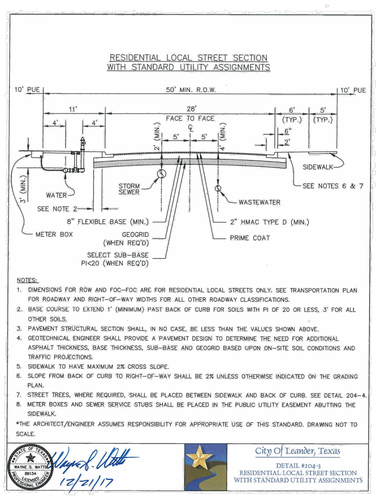
City Of Leander, Texas DETAIL #401-2 STREET NAME SIGN BLADES



The Architect/Engineer assumes responsibility for appropriate use of this standard.

Wayne S. Watts 86124 05/27/14

City Of Leander, Texas 401-5 POST-LOC FOUNDATION

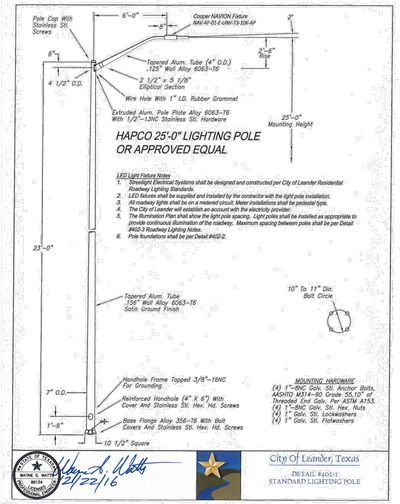


NOTES:
1. DIMENSIONS FOR ROW AND FOC–FOC ARE FOR RESIDENTIAL LOCAL STREETS ONLY. SEE TRANSPORTATION PLAN FOR ROADWAY AND RIGHT-OF-WAY WIDTHS FOR ALL OTHER ROADWAY CLASSIFICATIONS.
2. BASE COURSE TO EXTEND 1' (MINIMUM) PAST BACK OF CURB FOR SOILS WITH PI OF 20 OR LESS, 3' FOR ALL OTHER SOILS.
3. PAVEMENT STRUCTURAL SECTION SHALL, IN NO CASE, BE LESS THAN THE VALUES SHOWN ABOVE.
4. GEOTECHNICAL ENGINEER SHALL PROVIDE A PAVEMENT DESIGN TO DETERMINE THE NEED FOR ADDITIONAL ASPHALT THICKNESS, BASE THICKNESS, SUB-BASE AND GEOGRID BASED UPON ON-SITE SOIL CONDITIONS AND TRAFFIC PROJECTIONS.
5. SIDEWALK TO HAVE MAXIMUM 2% CROSS SLOPE.
6. SLOPE FROM BACK OF CURB TO RIGHT-OF-WAY SHALL BE 2% UNLESS OTHERWISE INDICATED ON THE GRADING PLAN.
7. STREET TREES, WHERE REQUIRED, SHALL BE PLACED BETWEEN SIDEWALK AND BACK OF CURB. SEE DETAIL 204-4.
8. METER BOXES AND SEWER SERVICE STUBS SHALL BE PLACED IN THE PUBLIC UTILITY EASEMENT ABUTTING THE SIDEWALK.

*THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. DRAWING NOT TO SCALE.

Wayne S. Watts 86124 12/21/17

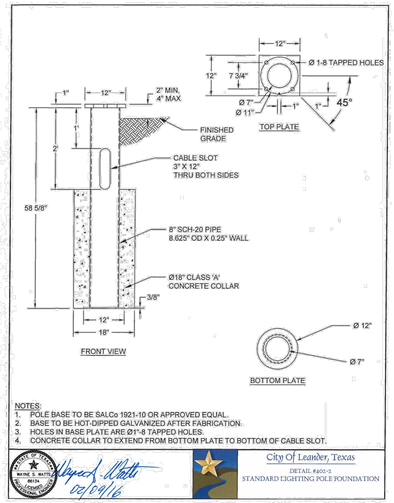
City Of Leander, Texas DETAIL #204-1 RESIDENTIAL LOCAL STREET SECTION WITH STANDARD UTILITY ASSIGNMENTS



LED Light Fixture Notes
1. Streetlight Electrical Systems shall be designed and constructed per City of Leander Residential Roadway Lighting Standards.
2. LED fixtures shall be supplied and installed by the contractor with the light pole installation.
3. All roadway lights shall be on a metered circuit. Meter installations shall be pedestal type.
4. The City of Leander will establish an account with the electricity provider.
5. The Illumination Plan shall show the light pole spacing. Light poles shall be installed as appropriate to provide continuous illumination of the roadway. Maximum spacing between poles shall be per Detail #403-3 Roadway Lighting Notes.
6. Pole foundations shall be per Detail #403-2.

Wayne S. Watts 86124 12/22/16

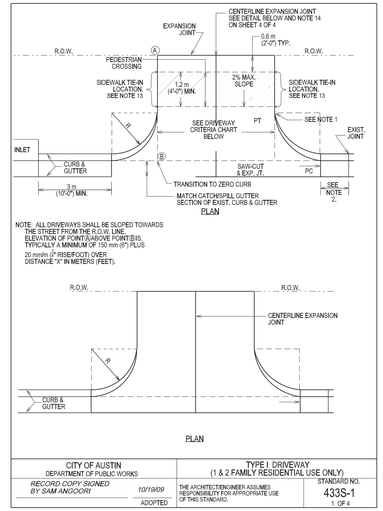
City Of Leander, Texas DETAIL #403-1 STANDARD LIGHTING POLE



NOTES:
1. POLE BASE TO BE SALCo 1921-10 OR APPROVED EQUAL.
2. BASE TO BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
3. HOLES IN BASE PLATE ARE Ø1"-8 TAPPED HOLES.
4. CONCRETE COLLAR TO EXTEND FROM BOTTOM PLATE TO BOTTOM OF CABLE SLOT.

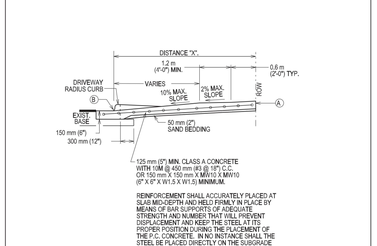
Wayne S. Watts 86124 02/09/16

City Of Leander, Texas DETAIL #403-3 STANDARD LIGHTING POLE FOUNDATION

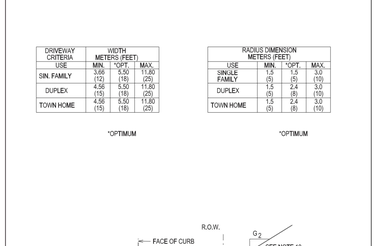


NOTE: ALL DRIVEWAYS SHALL BE SLOPED TOWARDS THE STREET FROM THE R.O.W. LINE. ELEVATION OF POINT (A)ABOVE POINT(B)IS, TYPICALLY A MINIMUM OF 150 mm (6") PLUS 20 mm/m (¼" RISE/FOOT) OVER DISTANCE "X" IN METERS (FEET).

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)
RECORD COPY SIGNED BY SAM ANGOORI 10/19/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 433S-1 1 OF 4



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)
RECORD COPY SIGNED BY SAM ANGOORI 10/19/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 433S-1 2 OF 4

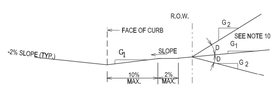


DRIVEWAY CRITERIA USE	WIDTH METERS (FEET) MIN.	*OPT.	MAX.
SIN. FAMILY	3.66 (12)	5.50 (18)	11.80 (25)
DUPLEX	4.56 (15)	5.50 (18)	11.80 (25)
TOWN HOME	4.56 (15)	5.50 (18)	11.80 (25)

*OPTIMUM

RADIUS DIMENSION METERS (FEET) USE	MIN.	*OPT.	MAX.
SINGLE FAMILY	1.5 (5)	1.5 (5)	3.0 (10)
DUPLEX	1.5 (5)	2.4 (8)	3.0 (10)
TOWN HOME	1.5 (5)	2.4 (8)	3.0 (10)

*OPTIMUM

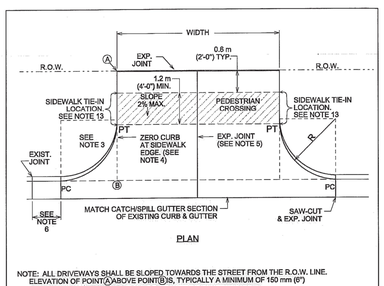


ALLOWABLE GRADES

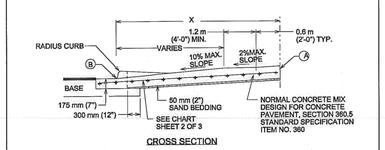
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)
RECORD COPY SIGNED BY SAM ANGOORI 10/19/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 433S-1 3 OF 4

NOTES:
1. "ZERO" CURB AT PT OR SIDEWALK EDGE, WHICHEVER IS ENCOUNTERED FIRST. THE DRIVEWAY EDGE SHALL BE SMOOTHLY TRANSITIONED INTO THE SIDEWALK BEGINNING AT THE RADIUS PC LINE.
2. IF DIMENSION IS LESS THAN 1.5 METERS (5 FEET), REMOVE CURB AND GUTTER TO EXISTING JOINT AND POUR MONOLITHICALLY WITH THE DRIVEWAY.
3. IF THE BASE IS OVER EXCAVATED WHERE THE CURB AND GUTTER WAS REMOVED, BACKFILL WITH CONCRETE MONOLITHICALLY WITH THE DRIVEWAY.
4. ALL DRIVEWAYS MUST BE CONSTRUCTED WITHIN THE STREET FRONTAGE OF THE SUBJECT PROPERTY AS DETERMINED BY EXTENDING THE SIDE PROPERTY LINES TO THE CURB.
5. DRIVEWAYS SHALL NOT EXCEED 70% OF A LOTS' STREET FRONTAGE.
6. TYPE I DRIVEWAYS ARE TO BE LOCATED NO CLOSER TO THE CORNER OF INTERSECTING RIGHTS-OF-WAY THAN 60% OF PARCEL FRONTAGE OR 15 METERS (50 FEET); WHICHEVER IS LESS.
7. DRIVEWAYS SHALL NOT BE CONSTRUCTED WITHIN THE CURB RETURN OF A STREET INTERSECTION.
8. SINGLE FAMILY LOTS LIMITED TO ONE DRIVEWAY EXCEPT FOR APPROVED SEMICIRCULAR DRIVES.
9. WHEN TWO DRIVEWAYS ARE USED (ONE PER UNIT; TWO MAXIMUM) FOR DUPLEXES AND TOWN HOMES, SINGLE FAMILY STANDARDS SHALL APPLY.
10. WHILE THE PROPERTY OWNER REMAINS RESPONSIBLE FOR GRADE BREAKS WITHIN PRIVATE PROPERTY, THE FIRE DEPARTMENT SHOULD BE CONSULTED WHERE THE DRIVEWAY IS ESSENTIAL TO EMERGENCY VEHICLE ACCESS AND "OZ" IS GREATER THAN 15%. "G1" PLUS "G" SHOULD NOT EXCEED 15%.
11. SEE TRANSPORTATION MANUAL SECTION 5 FOR OTHER DRIVEWAY REQUIREMENTS.
12. USE 12 mm (½") ASPHALT BOARD, OR OTHER APPROVED MATERIAL FOR CURB AND GUTTER EXPANSION JOINTS.
13. THE SIDEWALK, REGARDLESS OF ITS LOCATION WITH RESPECT TO THE CURB OR PROPERTY LINE, SHALL BE CONNECTED TO THE DRIVEWAY AT THESE LOCATIONS.
14. PLACE AN EXPANSION JOINT DOWN THE CENTER OF ALL DRIVEWAYS.
15. WATER METER BOXES AND WASTEWATER CLEAN OUTS ARE PROHIBITED FROM BEING LOCATED IN DRIVEWAY AREAS.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)
RECORD COPY SIGNED BY SAM ANGOORI 10/19/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 433S-1 4 OF 4

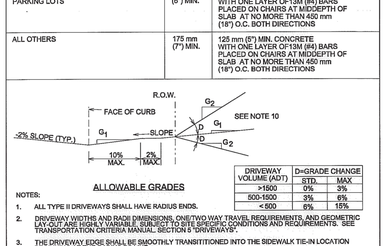


NOTE: ALL DRIVEWAYS SHALL BE SLOPED TOWARDS THE STREET FROM THE R.O.W. LINE. ELEVATION OF POINT(A)ABOVE POINT(B)IS, TYPICALLY A MINIMUM OF 150 mm (6") PLUS 20 mm/m (¼" RISE/FOOT) OVER DISTANCE "X" IN METERS (FEET).



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPE II DRIVEWAY
2/24/16 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 433S-2 1 OF 2

USE	THICKNESS	REINFORCEMENT
DRIVEWAYS FOR PASSENGER VEHICLE PARKING LOTS	150 mm (6") MIN.	125 mm (5") MIN. CONCRETE WITH ONE LAYER OF 15M (#4) BARS PLACED ON CHAIRS AT MIDDEPTH OF SLAB AT NO MORE THAN 450 mm (18") O.C. BOTH DIRECTIONS
ALL OTHERS	175 mm (7") MIN.	125 mm (5") MIN. CONCRETE WITH ONE LAYER OF 15M (#4) BARS PLACED ON CHAIRS AT MIDDEPTH OF SLAB AT NO MORE THAN 450 mm (18") O.C. BOTH DIRECTIONS



ALLOWABLE GRADES

DRIVEWAY VOLUME (ADT)	D=GRADE CHANGE STD.	MAX.
>1500	0%	3%
500-1500	3%	6%
< 500	6%	15%

NOTES:
1. ALL TYPE II DRIVEWAYS SHALL HAVE RADIUS ENDS.
2. DRIVEWAY WIDTHS AND RADII DIMENSIONS, OVER/TWO WAY TRAVEL REQUIREMENTS, AND GEOMETRIC DESIGN ARE SUBJECT TO ADJUSTMENT BASED ON SPECIFIC CONDITIONS AND REQUIREMENTS. SEE TRANSPORTATION CRITERIA MANUAL SECTION 5 "DRIVEWAYS".
3. THE DRIVEWAY EDGE SHALL BE SMOOTHLY TRANSITIONED INTO THE SIDEWALK TIE-IN LOCATION BEGINNING AT THE RADIUS PC LINE.
4. "ZERO" CURB AT PT OR SIDEWALK EDGE, WHICHEVER IS ENCOUNTERED FIRST.
5. PLACE AN EXPANSION JOINT DOWN THE CENTER OF DRIVEWAY ALL DRIVEWAYS.
6. IF DIMENSION IS LESS THAN 1.5 METERS (5 FEET), REMOVE CURB AND GUTTER TO EXISTING JOINT AND POUR MONOLITHICALLY WITH DRIVEWAY.
7. IF THE BASE IS OVER EXCAVATED WHERE THE CURB AND GUTTER WERE REMOVED, BACKFILL WITH CONCRETE MONOLITHICALLY WITH THE DRIVEWAY.
8. TYPE II DRIVEWAYS ARE TO BE LOCATED NO CLOSER TO THE CORNER OF INTERSECTING RIGHT OF WAY THAN 60% OF PARCEL FRONTAGE AT 30 METERS (100 FEET); WHICHEVER IS LESS.
9. DRIVEWAY SHALL NOT BE CONSTRUCTED WITHIN THE CURB RETURN OF A STREET INTERSECTION.
10. WHILE THE PROPERTY OWNER REMAINS RESPONSIBLE FOR GRADE BREAKS WITHIN PRIVATE PROPERTY, THE FIRE DEPARTMENT SHALL BE CONSULTED WHERE THE DRIVEWAY IS ESSENTIAL TO EMERGENCY VEHICLE ACCESS AND "OZ" IS GREATER THAN 15%.
11. USE 12 MM (1/2") ASPHALT BOARD OR OTHER APPROVED MATERIAL FOR CURB AND GUTTER EXPANSION JOINTS. SIDEWALK, AT THE R.O.W. LINE AND AT MIDWIDTH, SEE NOTE 5.
12. SEE TRANSPORTATION CRITERIA MANUAL, SECTION 5 FOR OTHER DRIVEWAY REQUIREMENTS.
13. THE SIDEWALK, REGARDLESS OF ITS LOCATION WITH RESPECT TO THE CURB OR PROPERTY LINE, SHALL BE CONNECTED TO THE DRIVEWAY AT THESE LOCATIONS.
14. WATER METER BOXES AND WASTEWATER CLEAN OUTS ARE PROHIBITED FROM BEING LOCATED IN DRIVEWAY AREAS.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPE II DRIVEWAY
2/24/16 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 433S-2 2 OF 2

No.	REVISIONS	DATE	BY

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TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS HARRISON M. HUDSON 109973 LICENSED PROFESSIONAL ENGINEER
09-29-2020

KHA PROJECT 069312667	
DATE	SEPTEMBER 2020
SCALE:	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

PAVING DETAILS

RESERVE AT NORTH FORK

CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
46 OF 48

NOTES

1. DURING SUBDIVISION CONSTRUCTION, UTILITY CONTRACTOR INSTALLS WASTEWATER CONNECTION TO MAIN, HORIZONTAL BELOW FOOT DIAMETER, AND VERTICAL FOR SERVICE LINE. CONTRACTOR SETS SEWER TAPE TO END OF LINE, WRAPS TAPE AROUND LENGTH OF PIPE MINIMUM TWO DEPTH OF THE 6" STUB AND TIES TO TOP OF PVC EXTENDING A MINIMUM OF 2 FEET ABOVE GROUND.

ALL WASTEWATER PIPING SHALL HAVE ELASTOMERIC GASKET TYPE JOINTS AND SHALL SLOPE DOWNWARD TO MAIN LINE AT NOT PER FOOT) MINIMUM TO 45° MAXIMUM. ENGINEER'S DESIGN PLANS SHALL SHOW ALL SERVICE LINES AS SHOWN ON PLANS BY ENGINEER'S DESIGN PLANS. WHERE SERVICE LINES ARE INSTALLED SHOWN ON PLANS BY ENGINEER, THE WASTEWATER SERVICE LINE TO MAIN SHALL BE DEFLECTED BY EXCEEDING 45° NEVER TO DETAIL 509-4C. ALL INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH THE CITY OF LEANDER CONSTRUCTION INSPECTION PROCEDURES. ALL WILL BE INSPECTED BY CITY OF LEANDER CONSTRUCTION INSPECTION PERSONNEL.

2. CUSTOMER REMOVES PLUG FROM 6" SERVICE LINE STUB, INSTALLS 6" 2-WAY CLEANOUT BY 4" REDUCER, RISER FOR CLEANOUT, 4" M.P.T. ADAPTER, 4" THREADED PLUG, AND 4" SERVICE LINE TO STRUCTURE. IF WASTEWATER WILL NOT SATISFACTORILY FLOW BY GRAVITY FROM STRUCTURE TO SEWER SERVICE STUB AT WASTEWATER MAIN, PUMP EQUIPMENT MUST BE PROVIDED BY THE CUSTOMER AS PART OF CUSTOMER'S WASTEWATER SYSTEM.

3. CUSTOMER IS RESPONSIBLE FOR PUBLIC PIPING SYSTEM UNTIL WASTEWATER IS ACCEPTED BY CITY OF LEANDER AS PART OF THE PUBLIC SYSTEM. THE CUSTOMER WHO SHALL CLEAN AND FLUSH THE PIPING SYSTEM AT THE TIME OF ACCEPTANCE, THAT CONNECTIONS TO CITY SYSTEMS ARE FREE FROM DEFECTS IN WORKMANSHIP OR MATERIAL, AND THAT THE CUSTOMER IS RESPONSIBLE TO ASSURE THAT ALL 2-WAY-CLEANOUTS REMAIN CLEAR OF SIDEWALKS AND OTHER OBSTRUCTIONS.

4. CITY OF LEANDER ACTIVITY IS LIMITED TO INSPECTION OF CONNECTIONS TO THE PUBLIC SYSTEM. CITY OF LEANDER ASSUMES NO RESPONSIBILITY FOR THE RESPONSIBILITIES ENDS AT THE CUSTOMER'S WASTEWATER CONNECTION TO THE 2-WAY-CLEANOUT.

5. PIPING AND TURNS IN STREET RIGHT-OF-WAY AND IN EASEMENT AREA SHALL BE BEDDED IN GRANULAR MATERIALS, AS REQUIRED BY CITY OF AUSTIN STANDARD SPECIFICATION, SECTION 506S. UNDERCUT AND BACKFILL ON THIS SERVICE MATERIALS SHALL BE AS SPECIFIED IN SECTION 506S. AND 2500 REQUIREMENTS. BEDDING MATERIAL SHALL EXTEND A MINIMUM OF 12" BELOW AND 12" ABOVE PIPE, AND 12" BEYOND JOINTS AT EACH END.

7. PIPE MATERIAL FOR WASTEWATER SERVICES SHALL BE 6" SDR-26 PVC D2241 160 PSI RATED.

8. NO METER BOX OR CLEAN OUT SHALL BE SET IN SIDEWALK OR DRIVEWAY AREA WITHOUT WRITTEN APPROVAL FROM THE CITY ENGINEERING DEPT.

9. NO JOINTS SHALL BE PERMITTED BETWEEN THE 4"x6" HORIZONTAL WYE AND THE 4" 2-WAY CLEANOUT EXCEPT FOR THE 6" x 45°-SWEEP BEND REQUIRED FOR DOUBLE SERVICES.

NOTES (CONT):

8. PAVING FRAME SHALL BE FLUSH WITH THE CONC. PAD AND PLACED ½" - 2" ABOVE RISER PIPE (FRAME SHALL NOT REST ON RISER).
9. IN UNPAVED AREAS, INSTALL ONE DELINEATOR STAKE IMMEDIATELY ADJACENT TO THE EDGE OF CONC. PAD. PAINT DELINEATOR STAKE BLUE FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER AND SHALL EXTEND AT LEAST 60" ABOVE GROUND. DELINEATORS SHALL HAVE 2" WIDE, WHITE IN COLOR, TYPE I REFLECTIVE TAPE MOUNTED DIAGONALLY AT 12" SPACING ON BOTH SIDES.
10. VALVE SHALL TYPICALLY BE CENTERED IN CONCRETE DIAMOND BUT MAY BE OFFSET WITH A MIN. OF 12" FROM CENTER OF VALVE LID TO EDGE OF CONCRETE IN ALL DIRECTIONS.
11. MIN. TOTAL DEPTH OF ASPHALT PLUS CONC. IS 9" AND MIN. DEPTH OF CONC. PAD SHALL BE 6"

CITY OF AUSTIN — AUSTIN WATER — RECORD COPY SIGNED BY KATHLI FLOWERS — 05/18/2016 ADOPTED — THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
TYPICAL GATE VALVE 4" - 16" — STANDARD NO. 511-AW-01 — 4 OF 4

FIRE HYDRANTS LACKING INTEGRAL STORZ CONNECTOR SHALL BE REJECTED (NO STORZ ADAPTERS ALLOWED)

NOTES:
1. FIRE HYDRANT SHALL BE CLOW MEDALLION F2545, AMERICAN DARLING B-84-B-5, MUELLER SUPER CENTURION, EJ W2500 WATERMASTER, KENNEDY K81D GUARDIAN, AVK 2780, OR APPROVED EQUAL VIA SUBMITTAL PROCESS. HYDRANT SHALL BE COMPLETE WITH INTEGRAL STORZ CONNECTION INCLUDED FACTORY INSTALLED, 5-INCH STORZ PUMPER NOZZLE, 7-INCH PORT DIAMETER WITH 4-INCH INSIDE DIAMETER PIPE THREADS.
2. HYDRANTS SHALL BE FACTORY PAINTED WITH PLANT ALUMINUM SILVER PAINT OR SHERWIN WILLIAMS SILVER METALLIC. FINISH COATS WILL NOT BE ACCEPTED IF PAINTED AFTER DELIVERY OR IF PAINT IS FLAT IN APPEARANCE.
3. ALL DUCTILE OF CAST IRON FITTINGS AND/OR PIPE SHALL BE POLYWRAPPED.
4. ALL 6" MECHANICAL JOINT GATE VALVES AND 6" PIPE AT HYDRANTS SHALL BE EQUIPPED WITH JOINT RESTRAINT "MEGALUG" OR APPROVED EQUAL. ALL HARDWARE TO BE CONCRETE THRUST BLOCKED.
5. BLUE, BI-DIRECTIONAL REFLECTIVE PAVEMENT MARKER, ULTRAFLEX MET RIGHT WISIBILITY SHALL BE INSTALLED PER TXDOT STANDARDS AND SPECIFICATIONS ON THE CORRESPONDING ROADWAY STATION OFFSET 8" TOWARDS FROM CENTER OF STREET ON THE SIDE OF THE HYDRANT IS LOCATED. AT INTERSECTIONS, MARKERS SHALL BE PLACED ON BOTH ROADWAYS ADJACENT TO HYDRANT.

LOCATION:
5. SET 6' A. OR LOT LINE (EXTENDED, WHEN POSSIBLE)
6. 7'-0" LOCATED AT STREET INTERSECTIONS SHALL BE PLACED A MINIMUM OF TEN FEET (10') FROM RADIUS TANGENT POINT
7. NO OBSTRUCTIONS SHALL BE PERMITTED WITHIN THREE FEET (3') IN ALL DIRECTIONS FROM FH.
8. 5-INCH STORZ PUMPER NOZZLE SHALL FACE THE FIRE LANE OR TRAVEL LANE UNLESS OTHERWISE NOTED.

CLASS A CONCRETE, 3000 PSI MINIMUM THICKNESS 9"
#5 REBAR MID-DEPTH
STANDARD FRAME AND COVER PER DETAIL 107-1
SAWCUT
SAWCUT PAVEMENT SURFACE
HMAC
FLEXIBLE BASE
CONTROLLED LOW STRENGTH MATERIAL (CLSM) TO LIMITS OF EXCAVATION AND BOTTOM OF MH CONE SECTION
CONTROLLED LOW STRENGTH MATERIAL (CLSM) OR SELECT FILL PER CITY CONSTRUCTION SPECIFICATION
SECTION A-A
3" MIN. CLEAR
9" MAX.
9" MAX.
9" MIN.
#5 REBAR
MANHOLE, PULLBOX OR OTHER SIMILAR STRUCTURE COVER
PLAN VIEW
NOTES:
1. CONCRETE SHALL BE CLASS A, 3000 PSI MINIMUM AND SHALL BE REINFORCED WITH #5 BARS AS SHOWN. THE CONCRETE SHALL EXTEND TO SAW CUT PAVEMENT EDGE.
2. PLACEMENT OF CLSM SHALL BE BELOW FLEXIBLE BASE LAYER TO LIMITS OF EXCAVATION.
3. INSTALLATION OF HMAC OVER CONCRETE ADJUSTMENT SHALL NOT BE

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	REINFORCED CURB AND GUTTER SECTION	
RECORD COPY SIGNED BY SAM ANGOORNI 01/04/10 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 4305-2

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)	
RECORD COPY SIGNED BY SAM ANGOORNI 10/19/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 433S-1 1 OF 4

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)	
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DRIVEWAY CRITERIA CHART	WIDTH: METRIC (FEET)		
USE	MIN.	*OPT.	MAX.
SIN. FAMILY	3.00 (10)	5.50 (18)	11.00 (36)
DUPLEX	4.00 (13)	6.00 (20)	11.00 (36)
TOWN HOME	4.00 (13)	6.00 (20)	11.00 (36)

RADIUS DIMENSION METRIC (FEET)			
USE	MIN.	*OPT.	MAX.
SINGLE FAMILY	0.5 (2)	1.2 (4)	3.0 (10)
DUPLEX	0.5 (2)	2.4 (8)	3.0 (10)
TOWN HOME	0.5 (2)	2.4 (8)	3.0 (10)

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)	
RECORD COPY SIGNED BY SAM ANGOORNI 10/19/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 433S-1 3 OF 4

NOTES:

1. "ZERO" CURB AT FF OR SIDEWALK EDGE, WHICHEVER IS ENCOUNTERED FIRST. THE DRIVEWAY SHALL BE SLOPED TO BE SMOOTHLY TRANSITIONED INTO THE SIDEWALK BEGINNING AT THE RADIUS P.T. LINE.
2. IF DIMENSION IS LESS THAN 1.5 METERS (5 FEET), REMOVE CURB AND GUTTER TO EXISTING JOINT AND POUR MONOLITHICALLY WITH THE DRIVEWAY.
3. IF THE BASE IS OVER EXCAVATED WHERE THE CURB AND GUTTER WAS REMOVED, BACKFILL WITH CONCRETE MONOLITHICALLY WITH THE DRIVEWAY.
4. ALL DRIVEWAYS MUST BE CONSTRUCTED WITHIN THE STREET FRONTAGE OF THE SUBJECT PROPERTY AS DETERMINED BY EXTENDING THE SIDE PROPERTY LINES TO THE CURB.
5. DRIVEWAYS SHALL NOT EXCEED 75% OF A LOTS' STREET FRONTAGE.
6. TYPE I DRIVEWAYS ARE TO BE LOCATED NO CLOSER TO THE CORNER OF INTER-SECTING RIGHTS-OF-WAY THAN 50% OF PARCEL FRONTAGE OR 15 METERS (50 FEET), WHICHEVER IS LESS.
7. DRIVEWAYS SHALL NOT BE CONSTRUCTED WITHIN THE CURB RETURN OF A STREET INTERSECTION.
8. SINGLE FAMILY LOTS LIMITED TO ONE DRIVEWAY EXCEPT FOR APPROVED SEMICIRCULAR DRIVES.
9. WHEN TWO DRIVEWAYS ARE USED (ONE PER UNIT), TWO MAXIMUM FOR DUPLEXES AND TOWN HOMES. SINGLE FAMILY STANDARD SHALL APPLY.
10. WHILE THE PROPERTY OWNER REMAINS RESPONSIBLE FOR GRADE BREAKS WITHIN PRIVATE PROPERTY, THE CITY MAY REQUIRE THAT THE SLOPE OF A PORTION OF A DRIVEWAY IS ESSENTIAL TO EMERGENCY VEHICLE ACCESS AND NOT OF A GREATER THAN 15%. "CUT" PLUS "D" SHOULD NOT EXCEED 15%.
11. SEE TRANSPORTATION MANUAL SECTION 5 FOR OTHER DRIVEWAY REQUIREMENTS.
12. USE 12 mm (½) ASPHALT BOARD, OR OTHER APPROVED MATERIAL, FOR CURB AND GUTTER EXPANSION JOINTS.
13. THE DRIVEWAY, REGARDLESS OF ITS LOCATION WITH RESPECT TO THE CURB OR SIDEWALK, SHALL BE CONNECTED TO THE DRIVEWAY AT THESE LOCATIONS.
14. PLACE AN EXPANSION JOINT DOWN THE CENTER OF ALL DRIVEWAYS.
15. WATER METER BOXES AND WASTEWATER CLEAN OUTS ARE PROHIBITED FROM BEING LOCATED IN DRIVEWAY AREAS.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)	
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CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SIDEWALK	
Bill Hawkins 7/6/16 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-1 1 OF 3

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SIDEWALK	
Bill Hawkins 7/6/16 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-1 2 OF 3

FIRE APPARATUS ACCESS ROADS:

1. ALL FIRE APPARATUS ACCESS ROADS AND TEMPORARY TURNAROUNDS SHALL COMPLY WITH THE CURRENT INTERNATIONAL FIRE CODE, AS ADOPTED BY THE CITY OF LEANDER, AND CITY OF LEANDER CODE OF ORDINANCES.
2. ALL FACILITIES, BUILDINGS OR PORTIONS OF BUILDINGS SHALL BE ACCESSIBLE TO FIRE DEPARTMENT APPARATUS BY WAY OF AN APPROVED FIRE APPARATUS ACCESS ROAD WITH AN ASPHALT, CONCRETE OR OTHER APPROVED SURFACE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF A FIRE APPARATUS WEIGHING AT LEAST 75,000 POUNDS.
3. FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED TEN PERCENT (10%) IN GRADE WITHOUT THE APPROVAL OF THE FIRE MARSHAL.
4. DEAD-END FIRE APPARATUS ACCESS ROADS IN EXCESS OF ONE HUNDRED AND FIFTY FEET (150') IN LENGTH SHALL BE PROVIDED WITH WIDTH AND TURNAROUND PROVISIONS IN ACCORDANCE WITH THE TABLE BELOW.

LENGTH (FEET)	WIDTH (FEET)	TURNAROUNDS REQUIRED
0-150	20	NONE REQUIRED
151-500	20	120-FOOT HAMMERHEAD, 60-FOOT "Y" OR 96-FOOT DIAMETER CUL-DE-SAC
501-750	26	120-FOOT HAMMERHEAD, 60-FOOT "Y" OR 96-FOOT DIAMETER CUL-DE-SAC
OVER 750		SPECIAL APPROVAL REQUIRED

5. GATES SECURING FIRE APPARATUS ACCESS ROADS SHALL COMPLY WITH THE FOLLOWING: GATES SHALL NOT LESS THAN TWENTY FEET (20') IN WIDTH WHERE A SINGLE GATE IS PROVIDED, WHERE A FIRE APPARATUS ROAD CONSISTS OF A DIVIDED ROADWAY, THE GATE WIDTH SHALL BE NOT LESS THAN TWELVE FEET (12').
6. ALL GATE LOCKS SHALL COMPLY WITH CITY OF LEANDER CODE OF ORDINANCES SECTION 506.1.3.
7. GATES SECURING FIRE APPARATUS ACCESS ROADS SHALL BE OF THE SWINGING OR SLIDING TYPE.
8. FIRE APPARATUS ACCESS ROADS SHALL BE TWENTY-SIX FEET (26') IN WIDTH FOR TWENTY-FEET (20') IN BOTH DIRECTIONS FROM FIRE HYDRANTS, AT MINIMUM, TO PROVIDE MINIMUM CLEARANCE FOR EMERGENCY OPERATIONS.

*THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. DRAWING NOT TO SCALE.

Kimley»Horn
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WWW.KIMLEY-HORN.COM
TEXAS REGISTERED ENGINEERING FIRM F-928

No.	REVISIONS	DATE	BY

KHA PROJECT	069312667
DATE	SEPTEMBER 2020
SCALE:	AS SHOWN
DESIGNED BY:	BG
DRAWN BY:	ORB
CHECKED BY:	BG

SITE DETAILS

RESERVE AT NORTH FORK
CITY OF LEANDER
WILLIAMSON COUNTY, TEXAS

SHEET NUMBER
48 OF 48

GENERAL CONSTRUCTION NOTES

1. These drawings and documents are submitted to the Owner of the project for review and approval prior to any release for bidding or construction. Contractors shall receive all bid information, instructions, bid forms, general terms and conditions, and all other required clarification from the Owner's Authorized Representative administering this project. Unless otherwise indicated, the Owner's Representative for this project shall be a specifically designated Landscape Architect from SEC Planning. The contractor will also be required to coordinate and correspond with the Landscape Architect from SEC Planning and key consultants for the Owner.

2. These drawings supplement other contractual information which includes Bid Instructions and Project Specifications. Anything mentioned in the Project Specifications and not in the drawings, or vice-versa, shall be of like effect as if shown on or mentioned in both. In case of a discrepancy between Drawings or Project Specifications, the matter shall be immediately submitted to the Owners Representative; without his decision said discrepancy shall not be adjusted by the Contractor, save only at his own risk and expense. The contractor shall not take advantage of any apparent error or omission on the Drawings or in the Specifications. In the event the Contractor discovers such error or omission, they shall immediately notify the Owner's Representative. The Owner's Representative will then make such clarification and interpretations as may be deemed necessary for the Contractor to fulfill the intent of the Contract.

3. The intent of these drawings, details and associated specifications is for the Contractor to provide the Owner with a complete, accurate, functionally and technically sound project as generally described in these documents. In most cases, unless explicitly noted otherwise, drawing symbols are used to represent complete-in-place systems to be provided as part of the base bid. All elements shown or implied by the drawings, if not specifically detailed or specified, shall be installed per building codes, manufacturer's recommendations, state highway department standards, city standards and specifications and standard industry practices.

4. All plan quantities provided are approximate only. The Contractor is responsible for their own plan take-off's and accuracy of their bid based on actual site conditions. The contractor shall not take advantage of any apparent error or omission on the Drawings or in the Specifications. In the event the Contractor discovers such error or omission, they shall immediately notify the Owner's Representative. The Owner's Representative will then make such clarification and interpretations as may be deemed necessary for the Contractor to fulfill the intent of the Contract.

5. All work within this project shall conform to current local codes, ordinances, as well as all other applicable governing regulations in effect.

6. All range points, ties, benchmarks or other survey control points which may be encountered during construction, must be preserved or modified/recorded by a registered surveyor at the Contractor's expense. Immediately upon discovery, the Contractor shall notify the Owner's Representative of any survey control points found and obtain direction prior to proceeding with construction.

7. The Contractor shall coordinate and obtain all permits which are necessary to perform the proposed work. Owner is to pay for all construction permits unless otherwise indicated in the Contract Documents. Contractor shall obtain, at his expense, all specialty permits needed for specific items included with the work, unless otherwise indicated in the Contract Documents. Should the Contractor commence work, prior to obtaining the required permits or jurisdictional approvals, the Contractor shall be responsible corrections, modifications, replacement or removal of the non-permitted work.

8. It is the Contractor's responsibility to be aware of and comply with all notifications and inspection requirements of the Jurisdiction.

9. Unless specifically noted otherwise in the Contract Documents, the Contractor shall obtain and coordinate all technical tests and reports by a certified independent laboratory or agency as outlined in the Specifications or these Drawings. The Owner may, at the Owner's sole discretion, provide separate testing and/or inspection service and the Contractor is required to fully coordinate with those consultants/contractors. Owner is to pay for all soils and materials testing.

10. An Existing Condition Survey may have been provided to the Owner by registered surveyors under separate contracts for the basis of design. It is not to be considered as part of these Contract Documents. If provided, these survey plans may have been reformatted and included in these documents. The Contractor is required to visit the site to verify information. Without exception, any deviations or omissions found between these plans and existing site conditions shall immediately be brought to the attention of the Owner's Representative, but will not be considered as basis for additional payment except as allowed in change order process per General Conditions and Supplementary Conditions under the "Owner-Contractor Agreements/Contracts. For official survey information, Contractor may wish to contact the Owner, or Owner's surveyor at the Contractors expense.

11. Existing utility information and utility information for proposed work by others that is shown in these documents is approximate and for general information only. It is not intended to depict exact locations of all utilities. The Contractor shall notify all utility companies to stake and field verify the locations including depths of all utilities (existing, proposed by others, or currently under construction), prior to commencing any related operations. Contractor shall maintain utility locations/structures during all remaining phases of work. The Contractor shall report to the Owner's Representative any utilities that may conflict with proposed work. This Contractor shall explore, understand, and coordinate (with subcontractors and others) all utilities impacts prior to submitting bid and shall be responsible for any modifications or damages to utility lines, structures or injuries therefrom. For existing utility information contact Texas 811. A minimum notice of 3 business days in advance of locational needs is required.

12. These drawings do not specify safety materials, staffing, equipment, methods or sequencing to protect persons and property. It shall be the Contractor's sole responsibility to direct and implement safety operations, staffing, procedures to protect the Owner and his representatives, new improvements, property, other contractors, the public and others.

13. The Contractor shall meet periodically with the Owner's Representative to determine marshalling areas, on-site storage, and contractor staff parking and to coordinate security issues, construction sequencing/phasing, scheduling, and maintaining public, emergency, handicapped or operations access before starting the related work. The Contractor shall meet any "Construction Criteria" or requirements shown on any Contract Documents, phasing plans or any imposed plan by the Owner as a part of the Base Bid.

14. Some work in this Contract may occur concurrent with work by others. Phasing, sequencing and coordination, with work by others, and on-going facility operations in and around the site area, is a part of the scope of work for this project. Notice to proceed with work in any general area shall be obtained from the Owner.

15. The Contractor will be required to complete all the work of this project according to these proposed drawings or subsequent clarification. A strict period of performance, including dates of substantial completion (for all and/or portions) and liquidation damages may be an integral element of the Contract.

16. Any site improvements requiring removal under this contract shall be properly and legally disposed off-site or, at the Owner's option, surrendered/stockpiled in an approved on-site location per the direction of the Owner or Owner's Representative.

17. The Contractor is required to maintain a complete and "up-to-date" set of all Contract Documents, including clarifications, change orders, etc., in good condition, at the construction site at all times. This set of documents will be made immediately available for review by the Owner's Representative and/or authorized Consultants upon request. Complete "As-Built" drawings and document submittals are also a requirement of this contract.

18. Maintenance, warranties and performance guarantees may be a requirement of this contract - see specifications.

19. Notes and details on specific drawings shall take precedence over general notes and typical details. The Contractor shall refer to all other Division Notes, Sheets Notes, Drawings and Project Contract Documents for additional information.

20. Contractor shall refer to other related drawings for all other related improvements that will impact this project and require coordination. Drawings may be made available to the Contractors at request.

TREE PROTECTION NOTE

1. All existing trees shall be protected from construction activities within construction zone. During which time, the use of a silt or chain link fence is required around each singular or group of protected trees. Parking of construction vehicles, equipment, and stockpiles within tree root zones is strictly prohibited. Contractor shall be responsible for any damage incurred to existing trees, including replacement, fees, fines or reimbursement to owner for said damages and, or to the City or Jurisdiction with governing authority per the Tree Ordinance.

OAK WILT PREVENTION NOTE

1. If Oak Wilt is found on site within work zone, owner must be notified and the following procedures must be followed in accordance with USDA standards, (http://www.na.fs.fed.us) including disinfecting construction removal devices, tree removal and treatment to prevent development of spore mats. These treatments include debarking, chipping and drying the wood, covering dead wood with plastic, burying the edges for six months and air drying for a similar amount of time to kill fungus and associated insects off site at state designated facility.

SIDEWALK NOTES:

1. Layout of concrete walkways shall be staked in the field and review by the Owner or Owner's Representative prior to construction. At that time walk may be adjusted as needed, using the Hardscape Plan as a guide. All grades and layout shall be confirmed prior to construction. Notify Owner and Owner's Representative of any conflicts or deviations to the issued plans.

2. All pedestrian paths shall be in compliance with all current Texas Accessibility Standards (T.A.S.) and ADA standards.

3. All walkway grades shall have a running slope of no greater than 4.7% (1:21) and a cross-slope that is not greater than 1.5% (1:66).

4. Slopes at or between 5.0% (1:20) and 8.3% (1:12) must have hand rails on both sides with ADA compliant level landings, and cross-slopes shall not exceed 1.5% (1:66).

HARDSCAPE LAYOUT AND INSTALLATION

1. All work shown shall be field staked and subject to field verification, review and approval by the Owner or Owner's Representative prior to any constructions or demolition. Field staking of all proposed work and adjacent construction (even if future work by others) may be required by the Owner's Representative prior to approval of all improvements and adequate stakes shall be provided by Contractor's surveyor.

2. To expedite, the layout of the site layout coordinates and/or grids may have been established in the Drawings. These points shall be field staked by the Contractor's surveyor as a part of this contract. The establishment of these points shall be approved by the Owner's Representative prior to any construction in those areas and will assist the Contractor in the layout of all site improvements as shown on drawing or otherwise.

3. The construction tolerances for this project are minimal and the dimensions shown are to be strictly adhered to.

4. Computed dimensions shall take precedence over scaled dimensions. Large scale drawings shall take precedence over small scale drawings. Dimensions shown with (+/-) shall be the only layout information allowed to vary, and may only vary to the tolerances given.

5. The Contractor is responsible to provide complete-in-place systems, and a complete project. Any intermittent or periodic approvals received for portions of work, stakes, grades, or forms (by the Owner or Owner's Representative, Architects, Engineers, or others) shall not waive the Contractor's requirements to comply with the intent of any and all portions of this contract.

6. All locations for walks, roads, swales, walls, curbs, structures etc. shall be staked by the Contractor. All layout information is based on ground coordinates and the Contractor shall meet with the owner's surveyors and engineers to clarify all datum, benchmark and control point requirements. Specific layout information will be provided to the Contractor by the Owner's Representative in AutoCAD (.dwg) format when requested.

7. It is the intent and requirement of this contract to provide curvilinear walks, walls and curbs with smooth transitions and arcs (both horizontal and vertical). Straight segments and abrupt transitions will not be accepted unless shown as such on the plans. Wood curving forms may be required to obtain the proper effects.

8. Hardscape improvements that are to be constructed per the drawings, shall be coordinated on site with the Owner's Representative, and be field staked or painted for approval of layout by the Owner's Representative prior to installation. Notify the Owner's Representative a minimum of 24 hours in advance for review. Improvements installed without field approval by Owner's Representative may be rejected and will be replaced at Contractors expense. At the time of staking, the Contractor shall confirm the quantity of the improvements match the approved contract. In the event the Contractor discovers such a discrepancy, he shall immediately notify the Owner's or Owner's Representative for direction on how to proceed, prior to commencing work.

9. All lot fencing or lot screen walls shall be placed on the property line or property boundary. Contractor shall confirm final location by field staking, to be reviewed by the Owner or Owner's Representative prior to construction.

GRADING NOTES

1. The Contractor shall obtain and review the Summary Report and Recommendations prepared by the geotechnical engineers and fully understand the existing soil conditions encountered prior to submitting bid. The Contractor shall comply with all recommendations made by the geotechnical engineers, civil engineers, structural engineers and Owner's Representative, as designated in the soil report, on these drawings, specified, or as directed during field observations and inspections.

2. All earthwork operations will be subject to full inspection and regular testing by a qualified soils and materials engineer and this Contractor shall be responsible to coordinate scheduling, notification and procuring test results and documentation as required. The Contractor shall notify the Owner's Representative of any subsoil conditions encountered, which vary from those found during previous soil investigations and/or that may not have been known during design. Any failed tests which must be retested will be a Contractor's expense.

3. All earthwork operations shall be conducted in strict compliance with the project specifications including but not limited to:

   a. Full locating, investigating and protection of ALL existing utilities to remain.
   b. Removal of any organic materials or debris.
   c. Stripping and stockpiling of all topsoil in approved location(s).
   d. Removal of all unstable fill materials encountered.
   e. Scarification and re-compaction to the minimum depth as specified and/or directed within all areas to receive fill, pavements or structures.
   f. All classifications of "excavation" as required to meet proposed lines, grades, typical cross sections and improvement elevations.
   g. Placement, shaping, and structural compaction of all classifications of "fill" or "embankment" as required to meet proposed lines, grades, typical cross sections and improvement elevations.
   h. Providing dewatering, optimum moisture control, climate protection, dust control, erosion control and all other specified treatments.
   i. Replacement of topsoil after grading changes have been accomplished.

4. See, and comply with, all specifications for depth of moisture density treatments, controls and compaction requirements.

5. These grading plans are intended to show vertical control of the site and are based upon the benchmarks, existing elevations and topography as provided by the Owner's surveyor. However, the Contractor, upon submittal of bid, agrees to accept the site grades and make all adjustments required to accomplish the work as proposed. Additionally proposed design elevations for adjacent construction projects may have to be incorporated if necessary. (Construction drawings for work by others, if applicable, are available upon request). Staking of future adjacent improvements, by this contract phase or by others, may be required if directed by the Owner's Representative to ensure proper coordination and requested staking is to be provided as part of this Base Bid.

6. This Contractor shall verify all existing grades to remain and all adjacent new construction grades for compliance with those shown, prior to bid and construction. All deviations or conflicts with proposed work shall be reported immediately (with follow-up written) notice within 24 hours to the Owner's Representative for direction to proceed, but will not be considered as basis for additional payment except as allowed in change order process per General Conditions and Supplementary Conditions under the existing "Owner-Contractor Agreements/Contracts".

7. The plans may call for specific temporary benchmarks to be transferred to the site by a certified surveyor and accurately established on site as a part of this contract. Contractor shall verify all benchmarks and information used in design and compare to existing conditions.

8. It is this Contractor's responsibility to provide proper positive drainage throughout this contract area. Field conditions shall be verified in conjunction with the proposed elevations to ensure that adequate drainage is provided. Report deviations or conflicts to Owner's Representative. Unless otherwise indicated, minimum slope for paved surfaces shall be 1% and minimum slope for non-paved areas shall be 2%. Slope away from all structures shall be 3% minimum, for a distance of 5' minimum. Maximum ground slopes to be 4' horizontal to 1' vertical, unless otherwise approved in advance.

9. All design elevations shown are "finished grades" unless otherwise indicated. Contractors shall refer to drawings, details and specifications regarding depth of sub-grade materials required to construct project improvements.

10. All topsoil and/or drainage way muck excavation shall be saved and stockpiled in approved locations for future use.

LIGHTING

1. Landscape lighting system is to be installed by a licensed electrician with documented experience in installing lighting systems of similar scope within the last two years. The Contractor is to supply a complete lighting system including all associated equipment such as conduit, weather proof and/or water proof junction boxes, ballasts, connectors, harnesses, time clocks, photocells, etc.

2. The Contractor shall review proposed layout of lighting system and all related equipment locations with the Owner or Owner's Representative prior to commencing installation.

3. After installation the Contractor will be required to adjust light fixtures until the Owner's Representative is satisfied with the desired effect. This will require the Contractor and/or the Contractor's electrician to meet with the Owner and Owner's Representative after sunset. This adjustment is to be included in the base Bid amount.

4. The Contractor shall provide a two year warranty on all equipment including lamps, ballasts and installation.

5. Independent ballasts, if required, shall be "ganged" in an inconspicuous, accessible location in a horizontal, weatherproof box or tray near ground level. Mounting of ballast in trees will not be allowed without written authorization from the Owner's Representative.

6. All exposed boxes, trays, conduit, etc. shall be painted by the contractor to blend in with surrounding landscape elements.

7. All equipment shall be U.L. listed and installation shall comply with N.E.C. and all other applicable codes.

8. All lights are to be controlled by a photocell on and timer off system unless specified otherwise on the drawings.

9. All wire run underground must be in rigid conduit.

10. Plan layout of underground wiring to minimize disturbance to the roots of existing trees. If underground wiring must pass through the critical root zone of protected trees, trenching and related work must be preformed by hand. No mechanical trenching is permitted within the Critical Root Zone.

11. Tree lighting (if applicable):
    a) Install Karlock (or equal) flexible conduit from base of tree to a minimum eight foot height above ground. At the end of the conduit install a waterproof hub (for single cable) or W-P bell box for multiple cables. Paint conduit and box to match tree trunk. Use SJTO electrical cord from conduit to light fixture. Attach cord to tree using long galvanized cord staples or other approved method. Provide a 3 foot loop of extra cord at the light fixture to allow for light adjustment and tree growth.
    b) Attach light fixtures to trees utilizing galvanized mounting plates drilled for hub connection with a minimum of two mounting screws. Mounting screws are to be ¼ - 20 heads x 5 length (one end wood screw threads and the other end bolt threads). Install at least two inches of thread into tree and install with at least two inches between tree and mounting plate.
    c) All tree downlights are to be mounted in the top third of the tree canopy.
    d) All fixtures are to be located, adjusted as needed and shielded to prevent glare, light trespass on to adjacent properties or Rights-of-way.

811 Know what's below. Call before you dig.

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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BENEDICT P. DESELLEM 6890 REGISTERED LANDSCAPE ARCHITECT STATE OF TEXAS

09/08/2020

RESERVE AT NORTH FORK
LANDSCAPE DEVELOPMENT PLANS
LEANDER, TEXAS

Drawing File Name
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Issued:
1. **Landscape Compliance 09/08/2020**
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Revisions:
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Issue Date: 09/08/2020

Drawn By: AO
Reviewed By: BD

Project No.
180134-PUTX

CONSTRUCTION NOTES

Sheet No.
LN-1 _____ of _____

CITY OF LEANDER
GENERAL NOTES

Revised November 10, 2016

ANY CHANGES TO THESE NOTES SHOULD BE CLOUDED ON THE PLAN SET.

CITY CONTACTS:
ENGINEERING MAIN LINE:512-528-2766
PLANNING DEPARTMENT:512-528-2750
PUBLIC WORKS MAIN LINE:512-259-2640
STORMWATER INSPECTIONS:512-285-0055
UTILITIES MAIN LINE:512-259-1142
UTILITIES ON-CALL:512-690-4760

1. THE CONTRACTOR SHALL VERIFY ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. ANY DISCREPANCIES WITH CONSTRUCTION PLANS FOUND IN THE FIELD SHALL BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER.
2. THE CONTRACTOR SHALL CONTACT THE TEXAS EXCAVATION SYSTEM AT 1-800-344-8377 FOR EXISTING UTILITY LOCATIONS 48 HOURS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES THAT ARE TO BE EXTENDED, TIED TO, CROSSED, OR ALTERED; OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS.
3. CONTACT THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT FOR EXISTING WATER AND WASTEWATER LOCATIONS 48 HOURS PRIOR TO CONSTRUCTION.
4. ANY CHANGES OR REVISIONS TO THESE PLANS MUST FIRST BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER FOR REVIEW AND WRITTEN APPROVAL PRIOR TO CONSTRUCTION OF THE REVISION.
5. A TRAFFIC CONTROL PLAN, IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, SHALL BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO ANY PARTIAL OR COMPLETE ROADWAY CLOSURES. TRAFFIC CONTROL PLANS SHALL BE SITE SPECIFIC AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. LANE CLOSURES ON ARTERIALS AND ANY FULL ROAD CLOSURES REQUIRE MESSAGE BOARDS NOTIFYING THE PUBLIC ONE WEEK PRIOR TO THE CLOSURE.
6. NO WORK IS TO BE PERFORMED BETWEEN THE HOURS OF 6:00 P.M. AND 7:00 A.M. THE CITY INSPECTOR RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO UNCOVER ALL WORK PERFORMED WITHOUT INSPECTION. FURTHER, THERE IS A NOISE ORDINANCE IN EFFECT FOR CONSTRUCTION ACTIVITY BETWEEN THE HOURS OF 9 PM AND 7 AM. REQUESTS FOR EXCEPTIONS TO THE ORDINANCE MUST BE MADE TO LEANDER CITY COUNCIL.
7. CONTACT THE CITY INSPECTOR 4 DAYS PRIOR TO WORK TO SCHEDULE ANY INSPECTIONS ON WEEKENDS OR CITY HOLIDAYS.
8. NO STREET LIGHTS OR SIGNS OF ANY KIND ARE TO BE PLACED WITHIN ANY SIDEWALKS.
9. NO BLASTING IS ALLOWED.
10. ANY EXISTING UTILITIES, PAVEMENT, CURBS, SIDEWALKS, STRUCTURES, TREES, ETC., THAT ARE DAMAGED OR REMOVED SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.
11. THE CONTRACTOR SHALL GIVE THE CITY OF LEANDER 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION. CONTACT ASSIGNED CITY INSPECTOR.
12. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND THE CITY OF LEANDER REPRESENTATIVES PRIOR TO INSTALLATION OF EROSION/SEDIMENTATION CONTROLS AND TREE PROTECTION MEASURES AND PRIOR TO BEGINNING ANY WORK. THE CONTRACTOR SHALL NOTIFY THE CITY OF LEANDER PLANNING DEPARTMENT PLANNING COORDINATOR AT LEAST THREE (3) DAYS PRIOR TO THE MEETING DATE.
13. THE CONTRACTOR AND ENGINEER SHALL KEEP ACCURATE RECORDS OF ALL CONSTRUCTION THAT DEVIATES FROM THE PLANS. THE ENGINEER SHALL FURNISH THE CITY OF LEANDER ACCURATE "RECORD DRAWINGS" FOLLOWING THE COMPLETION OF ALL CONSTRUCTION. THESE "RECORD DRAWINGS" SHALL MEET THE SATISFACTION OF THE ENGINEERING DEPARTMENTS PRIOR TO FINAL ACCEPTANCE
14. WHEN CONSTRUCTION IS BEING CARRIED OUT WITHIN EASEMENTS, THE CONTRACTOR SHALL CONFINE HIS WORK TO WITHIN THE PERMANENT AND TEMPORARY EASEMENTS. PRIOR TO ACCEPTANCE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL TRASH AND DEBRIS WITHIN THE PERMANENT EASEMENTS. CLEANUP SHALL BE TO THE SATISFACTION OF THE ENGINEER.
15. CONTRACTOR TO LOCATE, PROTECT, AND MAINTAIN BENCHMARKS, MONUMENTS, CONTROL POINTS AND PROJECT ENGINEERING REFERENCE POINTS. RE-ESTABLISH DISTURBED OR DESTROYED ITEMS BY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, AT NO ADDITIONAL COST TO OWNER.
16. THE CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. IN THE EVENT THAT A FENCE MUST BE REMOVED, THE CONTRACTOR SHALL REPLACE SAID FENCE OR PORTION THEREOF WITH THE SAME TYPE OF FENCING TO A QUALITY OF EQUAL OR BETTER THAN THE ORIGINAL FENCE.
17. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST CITY OF AUSTIN STANDARD SPECIFICATIONS. CITY OF AUSTIN STANDARDS SHALL BE USED UNLESS OTHERWISE NOTED IN DETAILS.
18. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). OSHA STANDARDS MAY BE PURCHASED FROM THE GOVERNMENT PRINTING OFFICE; INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA, 1033 LA POSADA DR. SUITE 375, AUSTIN, TEXAS 78752-3832.
19. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT WHERE NOT SPECIFICALLY COVERED IN THE PROJECT SPECIFICATIONS SHALL CONFORM TO ALL CITY OF LEANDER DETAILS AND CITY OF AUSTIN STANDARD SPECIFICATIONS.
20. PROJECT SPECIFICATIONS TAKE PRECEDENCE OVER PLANS AND SPECIAL CONDITIONS GOVERN OVER TECHNICAL SPECIFICATIONS.
21. HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE MINIMUM THICKNESS OF 2 INCHES WITH NO RECYCLED ASPHALT SHINGLES CONTENT.
22. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY RISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR THE CONSTRUCTION OF THIS PROJECT.
23. CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION BETWEEN HIMSELF AND OTHER CONTRACTORS AND UTILITIES IN THE VICINITY OF THE PROJECT. THIS INCLUDES GAS, WATER, WASTEWATER, ELECTRICAL, TELEPHONE, CABLE TV AND STREET DRAINAGE WORK. ONCE THE CONTRACTOR BECOMES AWARE OF A POSSIBLE CONFLICT, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER WITHIN TWENTY-FOUR (24) HOURS.
25. THE CONTRACTOR MUST OBTAIN A CONSTRUCTION WATER METER FOR ALL WATER USED DURING CONSTRUCTION. A COPY OF THIS PERMIT MUST BE CARRIED AT ALL TIMES BY ALL WHO USE WATER.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADS AND DRIVES ADJACENT TO AND NEAR THE SITE FREE FROM SOIL, SEDIMENT AND DEBRIS. CONTRACTOR WILL NOT REMOVE SOIL, SEDIMENT OR DEBRIS FROM ANY AREA OR VEHICLE BY MEANS OF WATER. ONLY SHOVELING AND SWEEPING WILL BE ALLOWED. CONTRACTOR WILL BE RESPONSIBLE FOR DUST CONTROL FROM THE SITE.
27. THE CITY OF LEANDER SHALL NOT BE PETITIONED FOR ACCEPTANCE UNTIL ALL NECESSARY EASEMENT DOCUMENTS HAVE BEEN SIGNED AND RECORDED.
28. AN ENGINEER'S CONCURRENCE LETTER AND RECORD DRAWINGS SHALL BE SUBMITTED TO THE ENGINEERING DEPARTMENT PRIOR TO THE ISSUANCE OF CERTIFICATE OF COMPLETION OR SUBDIVISION ACCEPTANCE. THE ENGINEER AND CONTRACTOR SHALL VERIFY THAT ALL FINAL REVISIONS AND CHANGES HAVE BEEN MADE TO THE DIGITAL COPY PRIOR TO CITY SUBMITTAL. RECORD CONSTRUCTION DRAWINGS, INCLUDING ROADWAY AND ALL UTILITIES SHALL BE PROVIDED TO THE CITY IN DIGITAL FORMAT AS AUTOCAD ".DWG" FILES, MICROSTATION ".DGN" FILES OR ESRI ".SHP" FILES ON CD ROM. LINE WEIGHTS, LINE TYPES AND TEXT SIZE SHALL BE SUCH THAT IF HALF-SIZE PRINTS (11"X17") WERE PRODUCED, THE PLANS WOULD STILL BE LEGIBLE. ALL REQUIRED DIGITAL FILES SHALL CONTAIN A MINIMUM OF TWO CONTROL POINTS REFERENCED TO THE STATE PLANE GRID COORDINATE SYSTEM - TEXAS CENTRAL ZONE (4203), IN US SURVEY FEET AND SHALL INCLUDE ROTATION INFORMATION AND SCALE FACTOR REQUIRED TO REDUCE SURFACE COORDINATES TO GRID COORDINATES IN US SURVEY FEET
29. TREES IN EXISTING ROW SHOULD BE PROTECTED OR NOTED IN THE PLANS TO BE REMOVED.

EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE PROTECTIVE FENCING PRIOR TO ANY WORK (CLEARING, GRUBBING OR EXCAVATION). CONTACT STORMWATER INSPECTOR FOR ON SITE INSPECTION PRIOR TO BEGINNING CONSTRUCTION.
2. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO ENSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.
3. THE TEMPORARY SPOILS DISPOSAL SITE IS TO BE SHOWN IN THE EROSION CONTROL MAP.
4. ANY ON-SITE SPOILS DISPOSAL SHALL BE REMOVED PRIOR TO ACCEPTANCE UNLESS SPECIFICALLY SHOWN ON THE PLANS. THE DEPTH OF SPOIL SHALL NOT EXCEED 10 FEET IN ANY AREA.
5. ALL AREAS DISTURBED OR EXPOSED DURING CONSTRUCTION SHALL BE RESTORED WITH A MINIMUM OF 6 INCHES OF TOPSOIL AND COMPOST BLEND. TOPSOIL ON SINGLE FAMILY LOTS MAY BE INSTALLED WITH HOME CONSTRUCTION. THE TOPSOIL AND COMPOST BLEND SHALL CONSIST OF 75% TOPSOIL AND 25% COMPOST.
6. SEEDING FOR REESTABLISHING VEGETATION SHALL COMPLY WITH THE AUSTIN GROW GREEN GUIDE OR WILLIAMSON COUNTY'S PROTOCOL FOR SUSTAINABLE ROADSIDES (SPEC 164--WC001 SEEDING FOR EROSION CONTROL). RESEEDING VARIETIES OF BERMUDA SHALL NOT BE USED.
7. STABILIZED CONSTRUCTION ENTRANCE IS REQUIRED AT ALL POINTS WHERE CONSTRUCTION TRAFFIC IS EXITING THE PROJECT ONTO EXISTING PAVEMENT. LINEAR CONSTRUCTION PROJECTS MAY REQUIRE SPECIAL CONSIDERATION. ROADWAYS SHALL REMAIN CLEAR OF SILT AND MUD.
8. TEMPORARY STOP SIGNS SHOULD BE INSTALLED AT ALL CONSTRUCTION ENTRANCES WHERE A STOP CONDITION DOES NOT ALREADY EXIST.
9. IN THE EVENT OF INCLEMENT WEATHER THAT MAY RESULT IN A FLOODING SITUATION, THE CONTRACTOR SHALL REMOVE INLET PROTETION MEASURES UNTIL SUCH TIME AS THE WEATHER EVENT HAS PASSED.

WATER AND WASTEWATER NOTES

1. PRESSURE TAPS SHALL BE IN ACCORDANCE WITH CITY OF LEANDER STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL PERFORM ALL EXCAVATION, ETC. AND SHALL FURNISH, INSTALL AND AIR TEST THE SLEEVE AND VALVE. A CITY OF LEANDER INSPECTOR MUST BE PRESENT WHEN THE CONTRACTOR MAKES A TAP, AND/OR ASSOCIATED TESTS. A MINIMUM OF TWO (2) WORKING DAYS NOTICE IS REQUIRED. "SIZE ON SIZE" TAPS WILL NOT BE PERMITTED UNLESS MADE BY THE USE OF AN APPROVED FULL-CIRCLE GASKETED TAPPING SLEEVE. CONCRETE BLOCKING SHALL BE PLACED BEHIND AND UNDER ALL TAP SLEEVES A MINIMUM OF 24 HOURS PRIOR TO THE BRANCH BEING PLACED INTO SERVICE. BLOCKING SHALL BE INSPECTED PRIOR TO BACKFILL.
2. FIRE HYDRANTS ON MAINS UNDER CONSTRUCTION SHALL BE SECURELY WRAPPED WITH A BLACK POLY WRAP BAG AND TAPED INTO PLACE. THE POLY WRAP SHALL BE REMOVED WHEN THE MAINS ARE ACCEPTED AND PLACED INTO SERVICE.
3. CURVILINEAR WASTEWATER DESIGN LAYOUT IS NOT PERMITTED.
4. THRUST BLOCKING OR RESTRAINTS SHALL BE IN ACCORDANCE WITH THE CITY OF LEANDER STANDARD SPECIFICATIONS AND REQUIRED AT ALL FITTINGS PER DETAIL OR MANUFACTURES RECOMMENDATION.ALL FITTINGS SHALL HAVE BOTH THRUST BLOCKING AND RESTRAINTS.
5. MANDREL TESTING WILL BE REQUIRED ON ALL WASTEWATER PIPE. PER TCEQ, THIS TEST MUST BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.
6. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL SANITATION FOUNDATION (ANSI/NSF) STANDARD 61 AND MUST BE CERTIFIED BY AND ORGANIZATION ACCREDITED BY ANSI
7. TRENCH BACKFILL MUST BE COMPACTED BY FLOODING THE TRENCHES.
8. ALL WATER SERVICE, WASTEWATER SERVICE AND VALVE LOCATIONS SHALL BE APPROPRIATELY STAMPED AS FOLLOWS:

WATER SERVICE	"W" ON TOP OF CURB
WASTEWATER SERVICE	"S" ON TOP OF CURB
VALVE	"V" ON TOP OF CURB

9. TOOLS FOR STAMPING THE CURBS SHALL BE PROVIDED BY THE CONTRACTOR. OTHER APPROPRIATE MEANS OF STAMPING SERVICE AND VALVE LOCATIONS SHALL BE PROVIDED IN AREAS WITHOUT CURBS. SUCH MEANS OF STAMPING SHALL BE SPECIFIED BY THE ENGINEER AND ACCEPTED BY THE CITY OF LEANDER
10. ALL PLASTIC PIPES FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 200 PSI.
11. NO PIPE OR FITTING WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY.
12. TYPCIAL DEPTH OF COVER FOR ALL WASTEWATER LINES SHALL BE 48" MINIMUM, WATER LINES SHALL BE 36" MINIMUM UNDER BOTH PAVEMENT AND NATURAL GROUND. STORM SEWER SHALL BE 24" MINIMUM UNDER NATURAL GROUND
13. THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY AWWA FORMULAS.
14. ALL WATER MAINS, DISTRIBUTION LINES AND SERVICE LINES SHALL BE INSTALLED IN ENCASEMENT PIPE UNDERNEATH EXISTING STREETS AND OTHER PAVED SURFACES UNLESS APPROVED WITH PLANS.
15. ALL MECHANICAL RESTRAINTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
16. WHERE WATER LINES CROSS WASTEWATER LINES AND THERE IS LESS THAN 9 FEET CLEARANCE BETWEEN LINES, THE WASTEWATER LINE SHALL BE PLACED SO THAT THE WASTEWATER PIPE SECTION IS CENTERED ON THE WATER LINE AND CONSTRUCTED IN ACCORDANCE WITH TCEQ CHAPTERS 217.53(b) AND 290.44(e)
17. PIPE MATERIAL FOR WATER MAINS SHALL BE PVC (AWWA C-900/905 MIN.200 PSI PRESURRE RATING), OR DUCTILE IRON (AWWA C-100 MIN. 200 PSI PRESSURE RATING). WATER SERVICES (2" OR LESS) SHALL BE POLYETHYLENE TUBING (BLACK, 200PSI, SDR-(9)
18. PIPE FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C-900), GREEN AND MARKED FOR SEWER. PIPE MATERIAL FOR GRAVITY WASTEWATER MAINS SHALL BE PVC (ASTM D2241, D3034 MAX. SDR-26 OR PS115 F679) OR FIBERGLASS WITH PIPE STIFFNESS OF 72 PSI PER COA SPL WW-509.
19. ALL FIRE HYDRANT LEADS SHALL BE DUCTILE IRON PIPE (AWWA C100 PRESSURE CLASS 350)
20. INTERIOR SURFACES OF ALL DUCTILE IRON POTABLE OR RECLAIMED WATER PIPE SHALL BE CEMENT-MORTAR LINED AND SEAL COATED AS REQUIRED BY AWWA C104.
21. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH MINIMUM 8-MIL POLYETHYLENE.
22. THE CONTRACTOR SHALL CONTACT THE ENGINEERING DEPARTMENT INSPECTOR AT 528-2700 AT LEAST 48 HOURS PRIOR TO CONNECTING TO THE EXISTING WATER LINES.
23. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON RING AND COVER. TAPPING OF FIBERGLASS MANHOLES SHALL NOT BE ALLOWED.
24. EXISTING MANHOLES MODIFIED BY CONSTRUCTION ACTIVITY SHALL BE TESTED FOR LEAKAGE BY VACUUM. ANY EXISTING MANHOLE WHICH FAILS TO PASS THE VACUUM TEST SHALL BE CLOSELY EXAMINED BY THE INSPECTOR AND THE CONTRACTOR TO DETERMINE IF THE MANHOLE CAN BE REPAIRED. THEREAFTER, THE CONTRACTOR SHALL EITHER REPAIR OR REMOVE AND REPLACE THE MANHOLE AS DIRECTED.
25. PIPE CONNECTIONS TO EXISTING MANHOLES AND JUNCTION BOXES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF AUSTIN SPECIFICATION 506.5.F.
26. LINE FLUSHING OR ANY ACTIVITY USING A LARGE QUANTITY OF WATER MUST BE COOORINATED WITH THE PUBLIC WORKS DEPARTMENT.
27. THE CONTRACTOR, AT HIS EXPENSE, SHALL PERFORM STERILIZATION OF ALL CONSTRUCTED POTABLE WATER LINES AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING TEST GAUGES), SUPPLIES (INCLUDING CONCENTRATED CHLORINE DISINFECTING MATERIAL), AND NECESSARY LABOR REQUIRED FOR THE STERILIZATION PROCEDURE. THE STERILIZATION PROCEDURE SHALL BE MONITORED BY CITY OF LEANDER PERSONNEL. WATER SAMPLES WILL BE COLLECTED BY THE CITY OF LEANDER TO VERIFY EACH TREATED LINE HAS ATTAINED AN INITIAL CHLORINE CONCENTRATION OF 50 PPM. WHERE MEANS OF FLUSHING IS NECESSARY, THE CONTRACTOR, AT HIS EXPENSE, SHALL PROVIDE FLUSHING DEVICES AND REMOVE SAID DEVICES PRIOR TO FINAL ACCEPTANCE BY THE CITY OF LEANDER.
28. SAMPLING TAPS SHALL BE BROUGHT UP TO 3 FEET ABOVE GRADE AND SHALL BE EASILY ACCESSIBLE FOR CITY PERSONNEL. AT THE CONTRACTORS' REQUEST, AND IN HIS PRESENCE, SAMPLES FOR BACTERIOLOGICAL TESTING WILL BE COLLECTED BY THE CITY OF LEANDER NOT

LESS THAN 24 HOURS AFTER THE TREATED LINE HAS BEEN FLUSHED OF THE CONCENTRATED CHLORINE SOLUTION AND CHARGED WITH WATER APPROVED BY THE CITY.

29. TESTING SHALL BE PERFORMED FOR ALL WASTEWATER PIPE INSTALLED AND PRESSURE PIPE HYDROSTATIC TESTING OF ALL WATER LINES CONSTRUCTED. THE OWNER'S CONTRACTOR SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GAUGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS. THE CONTRACTOR SHALL NOTIFY THE CITY OF LEANDER ENGINEERING DEPARTMENT NO LESS THAN 48 HOURS PRIOR TO PERFORMING STERILIZATION, QUALITY TESTS, OR PRESSURE TESTS. A CITY OF LEANDER INSPECTOR SHALL BE PRESENT FOR ALL TESTS AND SHALL BE PAID FOR BY THE OWNER/CONTRACTOR. THESE SERVICES ARE PAID FOR AT THE TIME OF CONSTRUCTION PLAN SUBMITTAL.
30. THE CONTRACTOR SHALL NOT OPEN OR CLOSE ANY VALVE UNLESS AUTHORIZED BY THE CITY OF LEANDER.
31. ALL VALVE BOXES AND COVERS SHALL BE CAST IRON.
32. ALL WATER VALVE COVERS ARE TO BE PAINTED BLUE.
33. ALL WATER METER BOXES SHALL BE:
    a. SINGLE DFW37F-12-1CA, OR EQUAL
    b. DUAL DFW39F-12-1CA, OR EQUAL
34. SAND, AS DESCRIBED IN AUSTIN SPECIFICATION ITEM 510 PIPE, SHALL NOT BE USED AS BEDDING FOR WATER AND WASTEWATER LINES. ACCEPTABLE BEDDING MATERIALS ARE PIPE BEDDING STONE, PEA GRAVEL AND IN LIEU OF SAND, A NATURALLY OCCURRING OR MANUFACTURED STONE MATERIAL CONFORMING TO ASTM C33 FOR STONE QUALITY AND MEETING THE FOLLOWING GRADATION SPECIFICATION:

SIEVE SIZE	PERCENT RETAINED BY WEIGHT
1/2"	0
3/8"	0-2
#4	40-85
#10	95-100

35. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTING TO, SHUTTING DOWN, OR TERMINATING EXISTING UTILITY LINES MAY HAVE TO OCCUR AT OFF-PEAK HOURS. SUCH HOURS ARE USUALLY OUTSIDE NORMAL WORKING HOURS AND POSSIBLY BETWEEN 12AM AND 6 AM.
36. ALL WASTEWATER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) REGULATIONS, 30 TAC CHAPTER 213 AND 30 TAC CHAPTER 217, AS APPLICABLE. WHENEVER TCEQ AND CITY OF LEANDER SPECIFICATION CONFLICT, THE MORE STRINGENT SHALL APPLY.
37. MANHOLES SHALL BE COATED PER CITY OF AUSTIN SPL WW-511 (Raven 405 or Spraywall).
38. DENSITY TESTING FOR TRENCH BACKFILL LOCATED WITHIN THE LIMITS OF THE PAVED AREA IS TO BE DONE IN 12" LIFTS EVERY 500' AND AT LEAST ONCE PER LINE SEGMENT
39. ALL GRAVITY WASTEWATER MAINS TO BE TESTED BY CAMERA AND PAID FOR BY THE CONTRACTOR. CAMERA TESTING FOR WASTEWATER LINES IN ROADWAY SHALL OCCUR BEFORE PAVING CONTRACTOR SHALL PROVIDE THE CITY WITH A DVD COPY OF THE FULL CAMERA INSPECTION.
40. RECLAIMED AND RECYCLED WATER LINE SHALL BE CONSTRUCTED OF "PURPLE PIPE." ALL RECLAIMED AND RECYCLED WATER VALVE COVERS SHALL BE SQUARE AND PAINTED PURPLE.

STREET AND DRAINAGE NOTES

1. ALL SIDEWALKS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT. THE CITY OF LEANDER HAS NOT REVIEWED THESE PLANS FOR COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT, OR ANY OTHER ACCESSIBILITY LEGISLATION, AND DOES NOT WARRANTY OR APPROVE THESE PLANS FOR ANY ACCESSIBILITY STANDARDS.
2. PRIOR TO ACCEPTANCE THE ENGINEER SHALL SUBMIT DOCUMENTATION THAT THE IMPROVEMENTS WERE INSPECTED BY TDLR OR A REGISTERED ACCESSIBLITY SPECIALIST (RAS) AND ARE IN COMPLIANCE WITH THE REQUIREMENTS OF THE TABA.
3. CONTRACTOR SHALL PROVIDE QUALITY TESTING FOR ALL INFRASTRUCTURES TO BE ACCEPTED AND MAINTAINED BY THE CITY OF LEANDER AFTER COMPLETION. THE CONTRACTOR SHALL NOTIFY THE CITY OF LEANDER ENGINEERING DEPARTMENT AT 528-2700 NO LESS THAN 48 HOURS PRIOR TO ANY TESTING.
4. BACKFILL BEHIND THE CURB SHALL BE COMPACTED TO OBTAIN A MINIMUM OF 95% MAXIMUM DENSITY TO WITHIN 6" OF TOP OF CURB. MATERIAL USED SHALL BE PRIMARILY GRANULAR WITH NO ROCKS LARGER THAN 6" IN THE GREATEST DIMENSION. THE REMAINING 6" SHALL BE CLEAN TOPSOIL FREE FROM ALL CLODS AND SUITABLE FOR SUSTAINING PLANT LIFE
5. A MINIMUM OF 6" OF TOPSOIL SHALL BE PLACED BETWEEN THE CURB AND RIGHT-OF-WAY AND IN ALL DRAINAGE CHANNELS EXCEPT CHANNELS CUT IN STABLE ROCK.
6. DEPTH OF COVER FOR ALL CROSSINGS UNDER PAVEMENT, INCLUDING GAS, ELECTRIC TELEPHONE, CABLE TV, ETC., SHALL BE A MINIMUM OF 36" BELOW SUBGRADE
7. STREET RIGHT-OF-WAY SHALL BE GRADED AT A SLOPE OF ¼" PER FOOT TOWARD THE CURB UNLESS OTHERWISE INDICATED. HOWEVER, IN NO CASE SHALL THE WIDTH OF RIGHT-OF-WAY AT ¼" PER FOOT SLOPE BE LESS THAN 10 FEET UNLESS A SPECIFIC REQUEST FOR AN ALTERNATE GRADING SCHEME IS MADE TO AND ACCEPTED BY THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT.
8. BARRICADES BUILT TO THE CITY OF LEANDER STANDARDS SHALL BE ERECTED ON ALL DEAD-END STREETS AND AS NECESSARY DURING CONSTRUCTION TO MAINTAIN JOB AND PUBLIC SAFETY.
9. ALL REINFORCED CONCRETE PIPE SHALL BE MINIMUM CLASS III OF TONGUE AND GROOVE OR O-RING JOINT DESIGN.
10. THE CONTRACTOR IS TO NOTIFY THE ENGINEERING INSPECTOR 48 HOURS PRIOR TO THE FOLLOWING TESTING: PROOF ROLLING SUB-GRADE AND EVERY LIFT OF ROADWAY EMBANKMENT, IN-PLACE DENSITY TESTING OF EVERY BASE COURSE, AND ASPHALT CORES. ALL OF THIS TESTING MUST BE WITNESSED BY A CITY OF LEANDER REPRESENTATIVE.
11. THE CONTRACTOR MUST PROVIDE A PNEUMATIC TRUCK PER TXDOT SPEC FOR PROOF ROLLING.
12. AT INTERSECTIONS WHICH HAVE VALLEY DRAINAGE, THE CROWNS OF THE INTERSECTING STREETS WILL CULMINATE IN A DISTANCE OF 40 FEET FROM INTERSECTING CURB LINE UNLESS OTHERWISE NOTED.
13. AT THE INTERSECTION OF TWO 44' STREETS OR LARGER, THE CROWNS OF THE INTERSECTING STREETS WILL CULMINATE IN A DISTANCE OF 40 FEET FROM INTERSECTING CURB LINE UNLESS OTHERWISE NOTED.
14. A CURB LAYDOWN IS REQUIRED AT ALL POINTS WHERE THE PROPOSED SIDEWALK INTERSECTS THE CURB.
15. ALL MACHINE-LAID CURB SHALL HAVE EXP ANSION JOINTS AT 40' INTERVALS.
16. ALL STRIPING, WITH THE EXCEPTION OF STOP BARS, CROSS WALKS, WORDS AND ARROWS, IS TO BE TYPE II (WATER BASED). STOP BARS, CROSS WALKS, WORDS AND ARROWS REQUIRE TYPE I THERMOPLASTIC.
17. MANHOLE FRAMES, COVERS, VALVES, CLEAN-OUTS, ETC. SHALL BE RAISED TO GRADE PRIOR TO FINAL PAVEMENT CONSTRUCTION.
18. CONTRACTOR SHALL NOTIFY THE LEANDER ENGINEERING DEPARTMENT AT 528-2700 AT LEAST 48 HOURS PRIOR TO THE INSTALLATION OF ANY DRAINAGE FACILITY WITHIN A DRAINAGE EASEMENT OR STREET ROW. THE METHOD OF PLACEMENT AND COMPACTION OF BACKFILL IN THE CITY'S ROW MUST BE APPROVED PRIOR TO THE START OF BACKFILL OPERATIONS.
19. SECURE INLET COVERS TO INLETS WITH CHAINS.
20. A STOP BAR SHALL BE PLACED AT ALL STOP SIGN LOCATIONS.
21. A MINIMUM OF SEVEN DAYS OF CURE TIME IS REQUIRED FOR HMAC PRIOR TO THE INTRODUCTION OF PUBLIC VEHICULAR TRAFFIC TO ANY STREETS.
22. THE GEOTECHNICAL ENGINEER SHALL INSPECT THE SUBGRADE FOR COMPLIANCE WITH THE DESIGN ASSUMPTIONS MADE DURING PREPARATION OF THE SOILS REPORT. ANY ADJUSTMENTS THAT ARE REQUIRED SHALL BE MADE THROUGH REVISIONS OF THE CONSTRUCTION PLANS.
23. GEOTECHNICAL INVESTIGATION INFORMATION AND PAVEMENT RECOMMENDATIONS WERE PROVIDED BY_____. PAVEMENT RECOMMENDATIONS ARE AS FOLLOWS:

TRENCH SAFETY NOTES

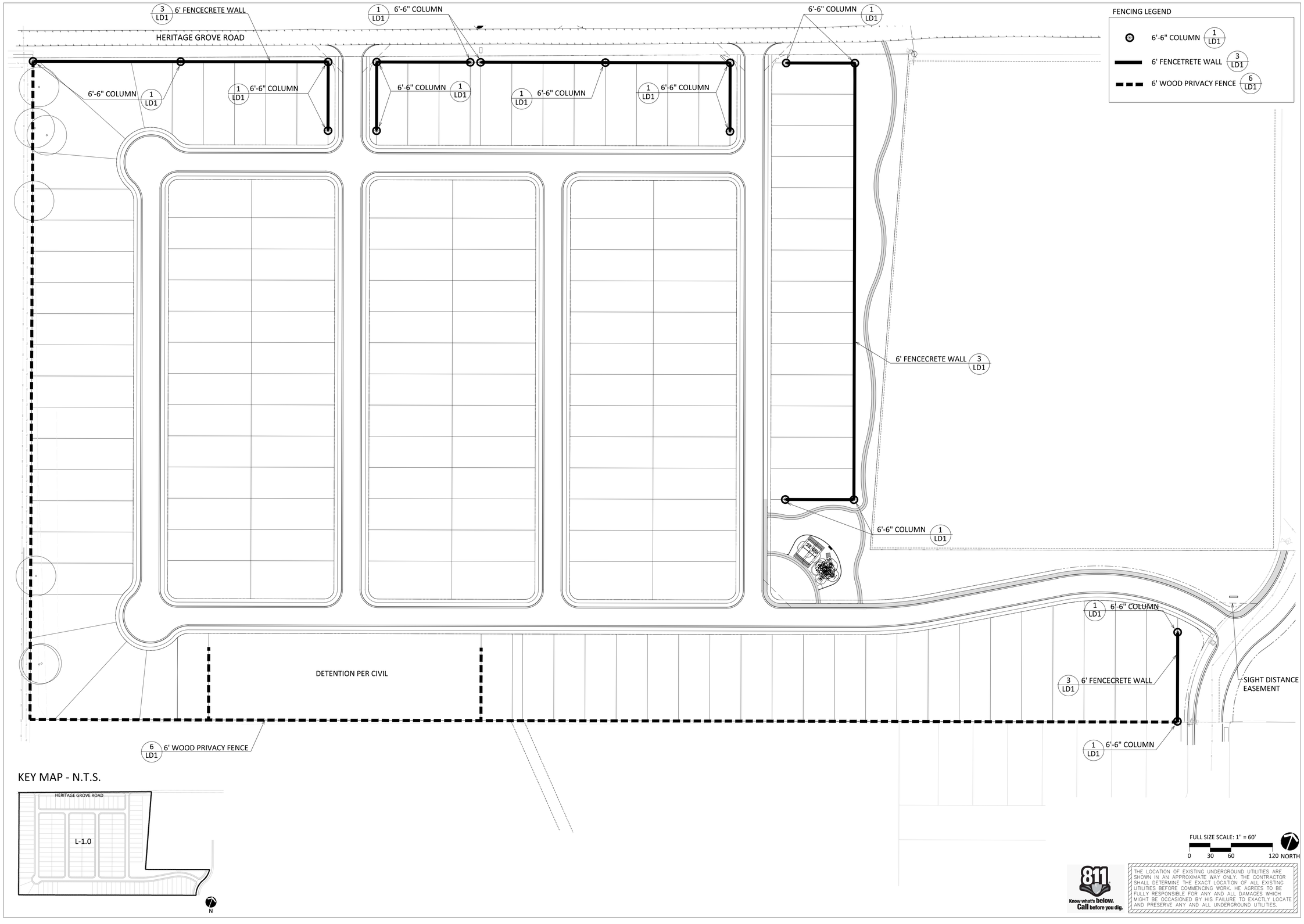
1. TRENCH SAFETY SYSTEMS TO BE UTILIZED FOR THIS PROJECT ARE DESCRIBED IN ITEM 509S "TRENCH SAFETY SYSTEMS" OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS AND SHALL BE IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND THE U.S. OCCUPATION SAFETY AND HEALTH ADMINISTRATION REGULATIONS.

GRADING NOTES

1. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.
2. THE CONTRACTOR SHALL CONSTRUCT EARTHEN EMBANKMENTS WITH SLOPES NO STEEPER THAN 3:1 AND COMPACT SOIL TO 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD SPECIFICATIONS.
3. AREAS OF SOIL DISTURBANCE ARE LIMITED TO GRADING AND IMPROVEMENTS SHOWN. ALL OTHER AREAS WILL NOT BE DISTURBED.

LANDSCAPE NOTES

1. Mechanical equipment shall be screened from view of at least sixty (60%) percent of any street or public right-of-way.
2. Tree caliper is the trunk diameter of a tree at four (12") inches above natural grade per the Composite Zoning Ordinance.
3. A minimum 6-inch topsoil depth will be provided in all landscaped areas and mulch will be provided around plantings.
4. All disturbed areas and ROW will be re-vegetated by the developer. The developer and subsequent owners of the landscaped property, or the manager or the agent of the owner, shall be responsible for the maintenance of all landscape areas. Said areas shall be maintained so as to present a healthy, neat and orderly appearance at all times and shall be kept free of refuse and debris. All planted areas shall be provided with an automatic irrigation system and watered as necessary to ensure continuous healthy growth and development. Maintenance shall include the replacement of all dead plant material if that material was used to meet the requirements of the Landscape Ordinance
5. No more than 50% of the same species may be planted to meet the tree planting requirements.
6. All new landscapes (non-residential and residential) are required to have a minimum of six inches (6") of soil depth in areas planted with turf grass. This six-inch (6") minimum soil depth will consist of 75 percent soil blended with 25 percent compost. The soil/compost blend shall be incorporated into the top two inches of the native soil. The six-inch (6") depth requirement does not apply to the area between the drip line and trunk of existing trees, shrub beds or wildscape areas. Areas with existing native veget



FENCING LEGEND

- 6'-6" COLUMN (1 LD1)
- 6' FENCETRETE WALL (3 LD1)
- 6' WOOD PRIVACY FENCE (6 LD1)

KEY MAP - N.T.S.

FULL SIZE SCALE: 1" = 60'

0 30 60 120 NORTH

811 Know what's below. Call before you dig.

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SEC Planning, LLC

Austin, Texas

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AUSTIN, TEXAS 78729

REGISTERED LANDSCAPE ARCHITECT
BENEDICT P. DEELEY
2890
STATE OF TEXAS

09/08/2020

RESERVE AT NORTH FORK
LANDSCAPE DEVELOPMENT PLANS
LEANDER, TEXAS

Drawing File Name
S:\180134-PUTX\Cadfiles\LA\Sheets\L-1.0 Fence Plan.dwg

Issued:
1. Landscape Compliance 09/08/2020
2.
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Revisions:
1.
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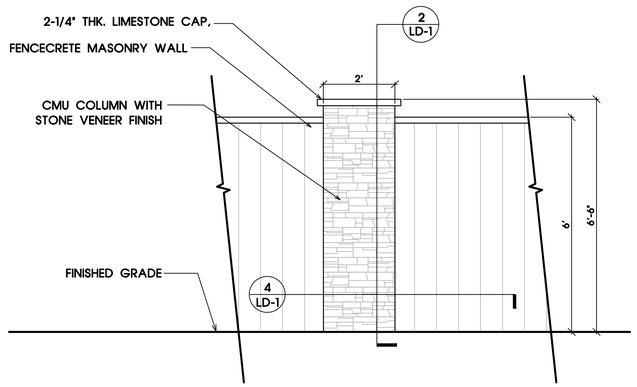
Issue Date: 09/08/2020

Drawn By: AO
Reviewed By: BD

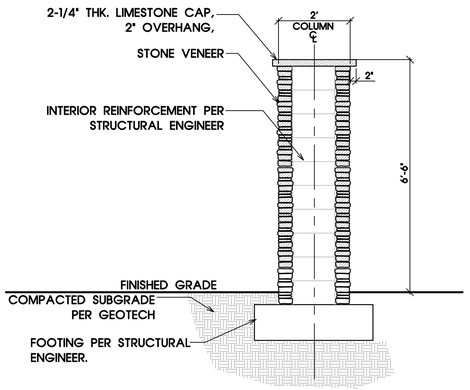
Project No.
180134-PUTX

FENCING PLAN

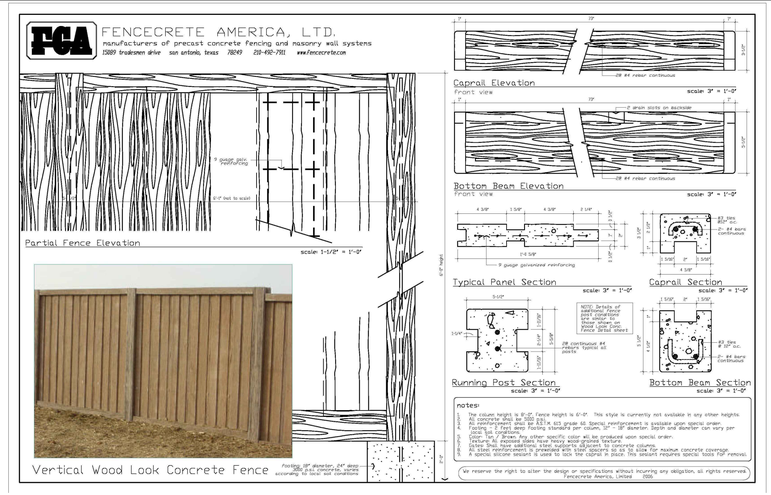
Sheet No.
L-1.0 _____ of _____



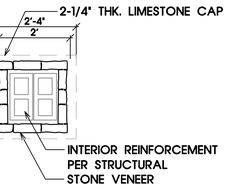
1 6'-6" COLUMN - ELEVATION
SCALE: 1/2" = 1'-0"



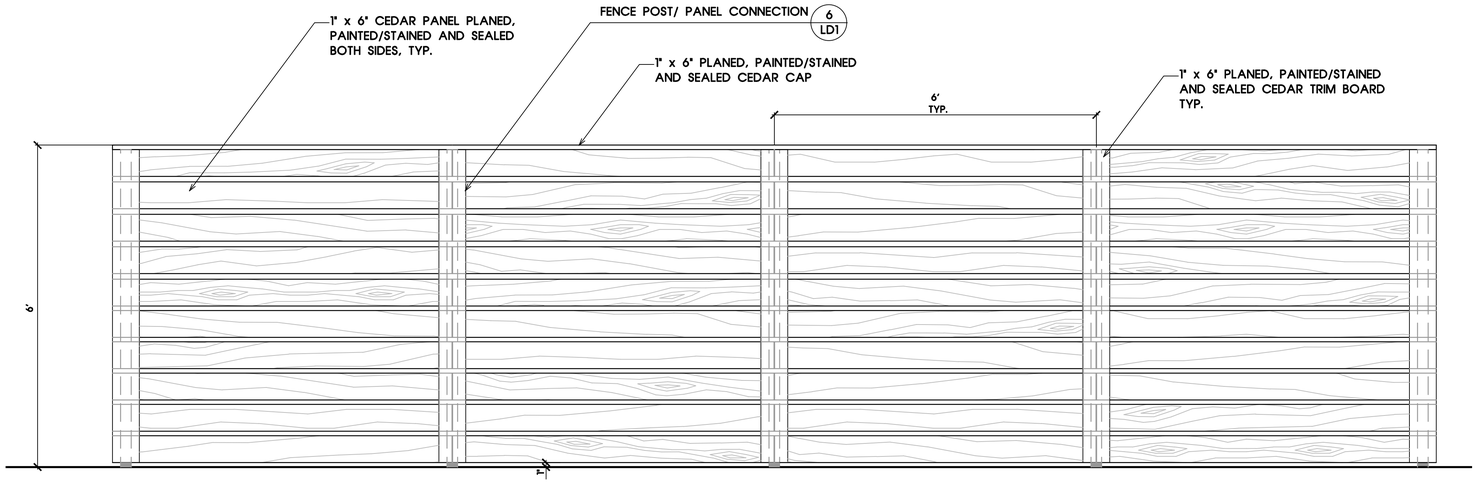
2 6'-6" COLUMN - SECTION
SCALE: 1/2" = 1'-0"



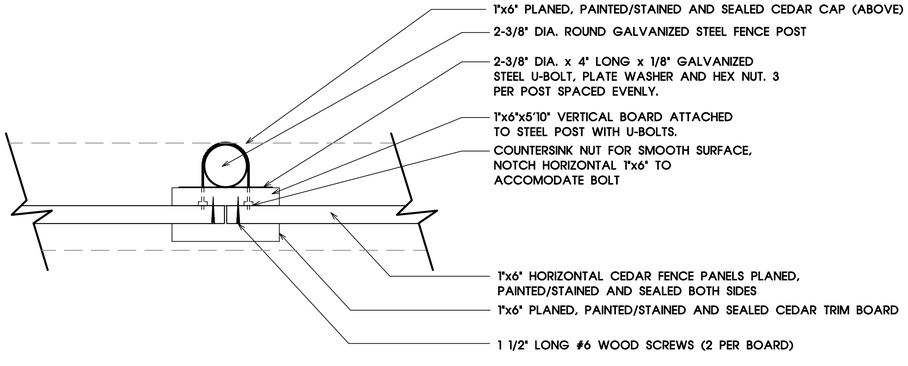
3 6' FENCECRETE WALL
SCALE: N.T.S.



4 6'-6" COLUMN - PLAN SECTION
SCALE: 1/2" = 1'-0"



5 6' WOOD PRIVACY FENCE - ELEVATION
SCALE: 3/4" = 1'-0"



6 FENCE POST / PANEL CONNECTION - PLAN SECTION
SCALE: 3" = 1'-0"

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Drawn By: AO
Reviewed By: BD

Project No.
180134-PUTX

HARDSCAPE DETAILS

Sheet No.
LD-1 _____ of _____

GENERAL PLANTING NOTES

1. Contractor shall be responsible for becoming aware of all related existing conditions, utilities, pipes and structures, etc. prior to bidding and construction. The Contractor shall be held responsible for contacting all utility companies for field location of all underground utility lines, including depths, prior to any excavation. The Contractor shall notify the Owner's representative of apparent conflicts with construction and utilities so that adjustments can be planned prior to installation. Contractor shall take sole responsibility for any and all cost or other liabilities incurred due to damage of said utilities/structures/etc.

2. The Contractor shall not willfully proceed with construction as designed when it is apparent that unknown obstructions and/or grade differences exist that may not have been known during design. Such conditions shall be immediately brought to the attention of the Owner's Representative for clarification. The Contractor shall assume full responsibility for all liabilities, including necessary revisions due to failure to give such notification.

3. Contractor shall be responsible for coordination with subcontractors and other contractors of related trades as required to accomplish the planting and related operations.

4. The acceptable tolerances for this project are minimal and specific layout is required as shown on the layout, planting and other plans. Final location and staking of all plant materials shall be accepted by the Owner's Representative in advance of plantings.

5. Coordinate installation of all plant material with installation of all adjacent irrigation, pavements, curb and related structures. Any damage to existing improvements is the responsibility of the Contractor.

6. Contractor shall notify Owner's Representative 48 hours prior to commencement of work to coordinate project inspection schedules.

7. The Contractor shall take all necessary scheduling and other precautions to avoid climatic damage to plants. A "planting" of specific calendar days is required to be submitted by the Contractor for approval and planting operations should occur per this approved schedule.

8. If conflicts arise between size of areas and plans, Contractor is required to contact Owner's Representative for resolution. Failure to make such conflicts known to the Owner's Representative will result in Contractor's liability to relocate the materials.

9. Plant names may be abbreviated on the drawings. See plant legend for symbols, abbreviations, botanical/common names, sizes, estimated quantities (if given) and other remarks.

10. It is the Contractor's responsibility to furnish all plant materials free of pests or plant diseases. Pre-selected or "tagged" material must be inspected by the Contractor and certified pest and disease free. It is the Contractor's obligation to maintain and warranty all plant materials per the specifications. All plants shall be subject to Owner's approval prior to installation.

11. Where provided, area takeoffs and plant quantity estimates in plant list are for information only. Contractor is responsible to do their own quantity take-offs for all plant materials and sizes shown on plans. In case of any discrepancies, plans take precedence over call-outs and/or the plant list(s).

12. Contractor shall provide "per-unit costs" for every size of plant material, and by type, as called out on Planting Plans in the Bid Proposal. Unit cost to include the plant material itself and installation, including all labor, amendments, fertilizers, warranty, etc., as detailed and specified for each size, "complete in place".

13. The Contractor is responsible to restore all areas of the site, or adjacent areas, where disturbed by operations of or related to the Contractor's work. Sod areas disturbed shall be restored with new sod. Native areas disturbed, if not already improved to meet other requirements of this contract, shall be restored consistent with type, rates and species of existing condition.

14. During plant establishment, native and wetland areas shall be protected from sedimentation and erosion. Prior to construction activities, native and wetland areas outside of the project limits shall be protected with silt fence.

15. When planting trees and shrubs in existing natural areas, minimize disturbance to adjacent existing vegetation.

16. No Ball & Burlap (B&B) material will be allowed or accepted unless specifically specified.

17. All plants shall be nursery grown, Grade 1 plants meeting American Nursery and Landscape Association (ANLA) standards set forth in the "American Standard for Nursery Stock" (ANSI Z60.1-2004). Plants are to be typical in shape and size for species. Plants shall not be root-bound or loose in their containers. Handle all plants with care in transporting, planting and maintenance until inspection and final acceptance.

18. Warranty: Provide a one-year replacement warranty for all plant materials. Warranty shall cover plants which have died or partially died (thereby ruining their natural shape), but shall not include damage by vandalism, browsing, hail, abnormal freezes, drought or negligence by the Owner. The Warranty is intended to cover Contractor negligence, infestations, disease and damage or shock to plants. Plants replaced under Warranty will be warranted for one year following replacement.

PLANTING LAYOUT AND INSTALLATION

1. The Contractor shall be responsible for accurately laying out the plant beds and lawn areas by scaling the Drawings. The Contractor shall provide paint lines/stakes/hose or other means to fully indicate the specific layout geometry of all bed lines for approval by Owner's Representative prior to installation. The Contractor's Base Bid shall anticipate minor adjustments as directed by the Landscape Architect in the field. Changes affecting quantities will be covered by unit prices.

2. Following the approval of layout, the Contractor shall closely coordinate the installation of the irrigation system to conform to the approved layout.

3. All planting beds are to be separated from adjacent Turf Sod, Turf Seed and Native Seed areas with edging per specifications and details. Additional locations may be indicated on the Drawings. Install edging following manufacture's installation instructions. Maintain an accurate layout with smooth curves and transitions, free of kinks and abrupt bends. Top of edging is to be 1" above soil level of adjacent turf. In Bid Proposal furnish a unit price per linear foot of edging installed.

4. Provide matching sizes and forms for all species of trees and plants installed on grid or spaced equally in rows as shown on drawings. Adjust spacing (to "equal-equal") as necessary, subject to acceptance by the Owner's Representative.

5. Unless otherwise indicated:

   a. All groupings of groundcovers, perennials, ornamental grasses and annuals shall be triangularly spaced (equal-equal).
   b. All planting areas including sod, seed and planting beds, shall receive soil amendments per the notes and specifications.
   c. Sodded lawn shall have been grown between 9 and 18 months and shall be vigorous, well-rooted and healthy turf. Minimum thatch thickness shall be ¾".
   d. Specific plant bed areas may be called out to receive weed barrier fabric, see plans and details.
   e. All bulb planting shall occur after mid-October and before ground is frozen. See details for bulb planting layout.

6. All Plant Beds and pit planted plants shall receive a 3" depth layer of shredded hardwood mulch. Refer to plans, details and specifications for location and type of any alternate mulch used. In Bid Proposal furnish a unit price(s) per cubic yard of mulch(es) placed. This unit price(s) will be used in the adjustment of bed areas.

7. Planting pits for 1 and 5 gallon shrubs shall be at least 8" larger in diameter than the container size. Larger container sizes and B&B plants shall be planted in pits at least 3 times larger in diameter than the root ball size.

8. Plants shall be installed to present their best side facing the viewer.

9. Owner's representative shall have final approval of plant material layout.

IRRIGATION GENERAL NOTES:

1. Obtain all permits and licenses applicable prior to the start of work.

2. All required landscape areas shall be irrigated per applicable local ordinances and tceq regulations.

3. Drip irrigation shall be placed in accordance with manufacturer recommendations. extend drip lines to irrigate planting adjacent to plant beds.
   a. Maximum drip lateral length shall not exceed manufacturer specifications

4. Any quantities shown are approximate. verify quantities and provide all labor, materials, and devices necessary to complete the irrigation system.

5. The layout shown is diagrammatic. do not place lines or devices in the critical root zone of any tree, or in pavement areas, or areas that conflict with proper installation and function of the system.

6. Site conditions:
   a. Verify and mark the location of all on-site utilities which might be affected by the irrigation system.
   b. Verify and mark the location of all buried cables, conduits, piping, etc. prior to trenching or digging. call Texas 811 per Texas utilities code title 5 chapter 251 underground facility damage prevention and safety.
   c. Adjust the design as necessary, together with the licensed irrigator, and owners, to suit site conditions, elevations and grades before proceeding with work.
   d. Protect from damage as necessary, existing property, existing landscape features, plant material, structures, this work in progress, and the work of other trades.

7. Provide professional grade valve boxes large enough to accommodate valves and other devices shown in the details. box extensions may be required. ground boxes shall be constructed of materials sufficient in strength to accept loads (pedestrian or vehicular) required based on actual installation location.

8. Pressure regulating component(s) shall be required where static pressure exceeds manufacturer's recommended operating range.

9. See details for other required materials and devices.

10. Piping and fittings:
   a. Mainline irrigation system piping 3" and larger shall be bell & gasketed schedule 40 pvc pipe. lateral irrigation system piping 3" and larger shall be bell & gasketed schedule 40 pvc pipe.
   b. All piping shall utilize thrust blocks at pipe connections per details. where leemco fitting/joint restraints are used thrust blocks may be excluded.
   c. All pipes and electrical bundles passing beneath driveways or paved areas must be sleeved with schedule 40 pvc pipe with solvent welded joints. sleeve diameter must equal twice that of the pipe or sized as shown on plans.
   d. All pvc pipe fittings shall be primed with a colored primer, prior to applying pvc cement.
   e. Irrigation mainline and laterals 4" and larger shall utilize leemco fittings/joint restraints as per manufacturer specifications.
   f. All lateral pipe shall buried to a min. depth of 6"
   g. All mainline pipe shall be buried to a depth of 18", where conditions prohibit this depth, a min. depth of 6" may be used when approved by the licensed irrigator

11. Excavation:
   a. Excavate to depths required to provide 4" depth of sand bedding for piping when rock or other unsuitable bearing materials are encountered
   b. Excavate trenches and install piping and fill during the same working day. do not leave open trenches or partially filled trenches open overnight

12. Irrigation controller and system shall be equipped with an evapotranspiration sensor for daily weather adjustment to run times, the e/t sensor shall have rain/freeze shutoff.
   a. Irrigation controller shall be equipped with a flow sensor
   b. irrigation controller shall be programmed prior to project closeout.

13. Backflow prevention devices:
   a. Install per manufacturer specifications
   b. Adequate insulation must be provided to protect against freeze

RESERVE AT NORTH FORK
PLANT LIST

SHADE TREES

NAME	Total QTY.	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
QUPO	26	*Quercus polymorpha*	Monterrey Oak	3" cal., 12'-15' ht. x 8' spd., Cont. Grwn	Per Plan
QUSH	25	*Quercus shumardii*	Shumard Oak	3" cal., 12'-15' ht. x 8' spd., Cont. Grwn	Per Plan
QUTE	4	*Quercus texana*	Texas Red Oak	3" cal., 12'-15' ht. x 8' spd., Cont. Grwn	Per Plan
QUVI	48	*Quercus virginiana*	Live Oak	3" cal., 12'-15' ht. x 8' spd., Cont. Grwn	Per Plan
TADI	17	*Taxodium distichum*	Bald Cypress	3" cal., 12'-15' ht. x 8' spd., Cont. Grwn	Per Plan
ULCR	31	*Ulmus crassifolia*	Cedar Elm	3" cal., 12'-15' ht. x 8' spd., Cont. Grwn	Per Plan
	151				

EVERGREEN & ORNAMENTAL TREES

NAME	Total QTY.	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
CETE	14	*Cercis texensis*	Texas Redbud	8' ht., min. 3 trunks @ 1" cal. each	Per Plan
CUAR	62	*Cupressus arizonica var. glabra 'Blue Ice'*	Arizona Cypress	3" cal., 15' ht.x 8' spd, container	Per Plan
ILVO	13	*Ilex vomitoria*	Yaupon Holly	8' ht., min. 3 trunks @ 1" cal. each	Per Plan
PRME	16	*Prunus mexicana*	Mexican Plum	8' ht., min. 3 trunks @ 1" cal. each	Per Plan
	105				

SHRUBS / PERENNIALS / SUCCULENTS / GROUNDCOVER

NAME	Total QTY.	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
AGWT	23	*Agave ovatifolia 'Whale's Tongue'*	Whale's Tongue Agave	7 gal. cont.	Per Plan
DIAR	25	*Dichondra argentea*	Silver Ponyfoot	1 gal. cont.	Per Plan
HEPA	28	*Hesperaloe parviflora*	Red Yucca	3 gal. cont.	Per Plan
ILVN	28	*Ilex vomitoria 'nana'*	Dwarf Yaupon Holly	3 gal. cont.	Per Plan
LOBU	19	*Loropetalum chinense var. rubrum 'Burgundy'*	Chinese Fringe Flower	5 gal. cont.	Per Plan
MYDD	29	*Myrica cerifera 'Don's Dwarf'*	Dwarf Wax Myrtle	5 gal. cont.	Per Plan
PHFR	85	*Phlomis fruticosa*	Jerusalem Sage	5 gal. cont.	Per Plan
SAIS	81	*Salvia 'Indigo Spires'*	Indigo Spires Sage	5 gal. cont.	Per Plan
TALE	16	*Tagetes lemonii*	Copper Canyon Daisy	5 gal. cont.	Per Plan
TEST	18	*Tecoma stans*	Esperanza	5 gal. cont.	Per Plan
	352				

ORNAMENTAL GRASSES

NAME	Total QTY.	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
MUCA	26	*Muhlenbergia capillaris*	Gulf Muhly	3 gal. cont.	Per Plan
MULI	63	*Muhlenbergia lindheimeri*	Big Muhly	5 gal. cont.	Per Plan
STTE	239	*Stipa tenuissima*	Mexican Feather Grass	1 gal. cont.	Per Plan
	328				

TURF GRASS/ PLANT BEDS

NAME	Total QTY.		DESCRIPTION	SIZE
Plant Bed	5,708	**s.f.**		
	70.47	**Topsoil**	4" Depth (Chocolate Loam)	c.y.
	35.23	**Plant Mix**	2" Depth (50% Manure/50% Compost)	c.y.
	52.85	**Mulch**	3" Depth (Double Shred Cedar)	c.y.
Turf Sod	85,994	**s.f.**	*Bermuda Sod*	s.f
	9,555	**Turf**	Bermuda T419	s.y.
	1,592.48	**Topsoil**	75% Topsoil blended with 25% Compost, 6" Depth	c.y.
Hyrdromulch	80,789	**s.f.**		
		lbs.	50% Bermuda Seed, 50% Native Sun Turf from Native American Seed Co. - www.seedsource.com	5 lbs seed per 1,700 sf
	498.70	**Topsoil**	2" Depth (Chocolate Loam)	c.y.

IRRIGATION

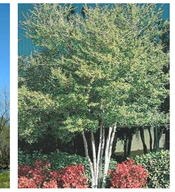
SYMB	QTY				
	1	Controller			
Plant Bed	5,708	**Plant Bed**	Drip/Spray		s.f.
Hydromulch	80,789	**Hydromulch**	Drip/Spray/Bubbler	Native Sun Mix and Bermuda seed	s.f.
Shade Trees	304	**Shade Trees**	Drip/Bubbler	2 per Shade/ Evergreen	ea.
Ornamental Trees	105	**Orn. Trees**	Drip/Bubbler	1 per Ornamental	ea.
Sod/Turf	85,994	**Bermuda T419**	Drip/Spray/Bubbler		s.f.

MISCELLANEOUS	QTY		ITEM NAME		SIZE
	1,491	l.f.	Steel Edging		3/16" Thick, Brown
	1,957	s.f.	River Rock	2"-4" Brazos Gravel	4" depth w/ weed barrier
	24	c.y.			


WHITE OAK


SHUMARD OAK


LIVE OAK


YAUPON HOLLY


BALD CYPRESS


CEDAR ELM


ARIZONA CYPRESS


TEXAS REDBUD


MEXICAN PLUM


WHALE'S TONGUE AGAVE


SILVER PONYFOOT


RED YUCCA


DWARF YAUPON HOLLY

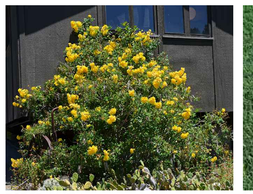

DWARF WAX MYRTLE


FRINGE FLOWER


JERUSALEM SAGE


INDIGO SPIRES SAGE


COPPER CANYON DAISY


ESPERANZA


BERMUDA TURF SOD


BIG MUHLY


MEXICAN FEATHER GRASS


HARDWOOD MULCH

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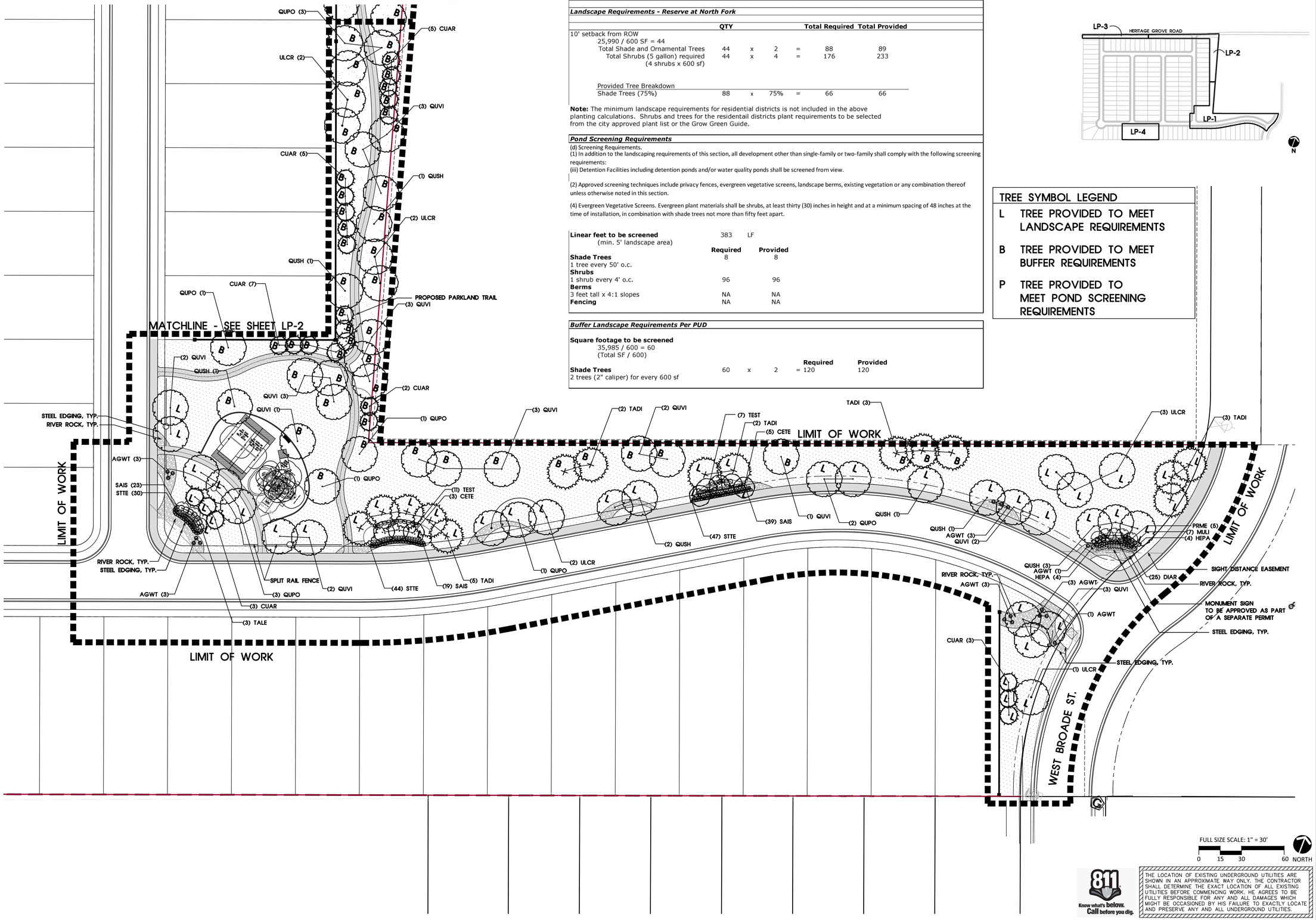
Issue Date: 09/08/2020

Drawn By: AO
Reviewed By: BD

Project No.
180134-PUTX

PLANTING NOTES

Sheet No.
LPN-1 _____ of _____



City of Leander Landscape Calculations

Landscape Requirements - Reserve at North Fork

	QTY				Total Required	Total Provided
10' setback from ROW						
25,990 / 600 SF = 44						
Total Shade and Ornamental Trees	44	x	2	=	88	89
Total Shrubs (5 gallon) required (4 shrubs x 600 sf)	44	x	4	=	176	233
Provided Tree Breakdown						
Shade Trees (75%)	88	x	75%	=	66	66

Note: The minimum landscape requirements for residential districts is not included in the above planting calculations. Shrubs and trees for the residentail districts plant requirements to be selected from the city approved plant list or the Grow Green Guide.

Pond Screening Requirements

(d) Screening Requirements.
(1) In addition to the landscaping requirements of this section, all development other than single-family or two-family shall comply with the following screening requirements:
(iii) Detention Facilities including detention ponds and/or water quality ponds shall be screened from view.

(2) Approved screening techniques include privacy fences, evergreen vegetative screens, landscape berms, existing vegetation or any combination thereof unless otherwise noted in this section.

(4) Evergreen Vegetative Screens. Evergreen plant materials shall be shrubs, at least thirty (30) inches in height and at a minimum spacing of 48 inches at the time of installation, in combination with shade trees not more than fifty feet apart.

			Required	Provided
Linear feet to be screened (min. 5' landscape area)	383	LF		
Shade Trees 1 tree every 50' o.c.			8	8
Shrubs 1 shrub every 4' o.c.			96	96
Berms 3 feet tall x 4:1 slopes			NA	NA
Fencing			NA	NA

Buffer Landscape Requirements Per PUD

Square footage to be screened
35,985 / 600 = 60
(Total SF / 600)

				Required	Provided
Shade Trees 2 trees (2" caliper) for every 600 sf	60	x	2	= 120	120

KEY MAP - N.T.S.

TREE SYMBOL LEGEND

- L TREE PROVIDED TO MEET LANDSCAPE REQUIREMENTS
- B TREE PROVIDED TO MEET BUFFER REQUIREMENTS
- P TREE PROVIDED TO MEET POND SCREENING REQUIREMENTS

FULL SIZE SCALE: 1" = 30'
0 15 30 60 NORTH

Know what's below. Call before you dig.

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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Austin, TX 78727
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www.secplanning.com
Email : info@secplanning.com

PULTE HOMES
CENTRAL TEXAS
9401 AMBERGLEN BLVD
BLDG I, SUITE 150
AUSTIN, TEXAS 78729

REGISTERED LANDSCAPE ARCHITECT
BENEDICT P. DEGELIA
2890
STATE OF TEXAS

09/08/2020

RESERVE AT NORTH FORK
LANDSCAPE DEVELOPMENT PLANS
LEANDER, TEXAS

Drawing File Name
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Sheet No. LP-1 _____ of _____

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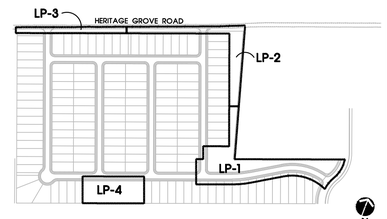

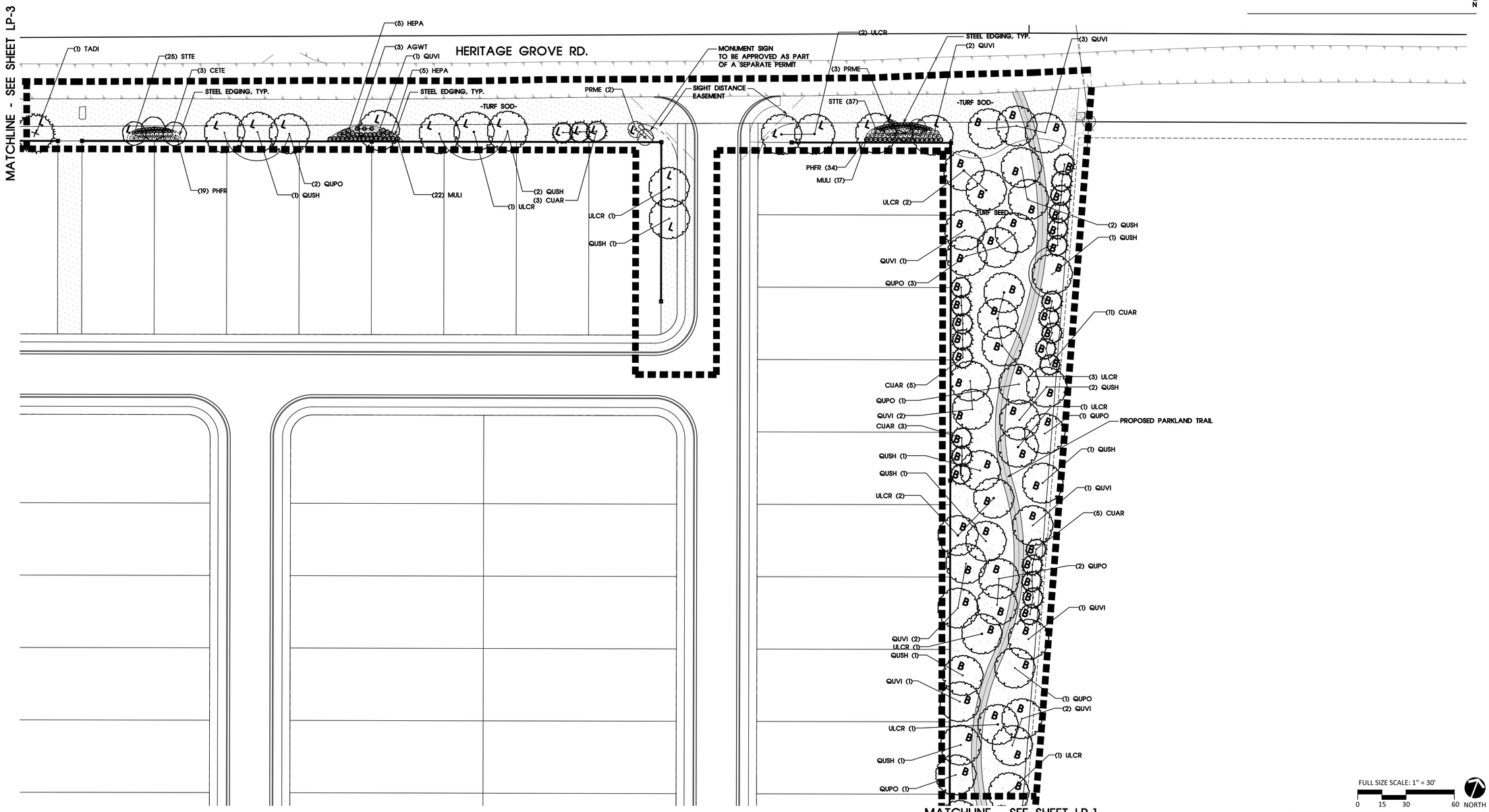

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BENEDICT P. DESELLE 6890 REGISTERED LANDSCAPE ARCHITECT STATE OF TEXAS

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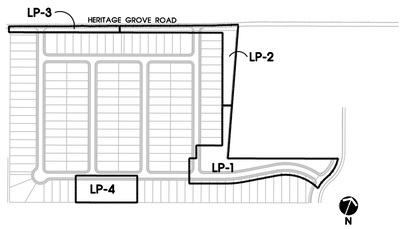
Project No.
180134-PUTX

Sheet No.
LP-2 _____ of _____

KEY MAP - N.T.S.



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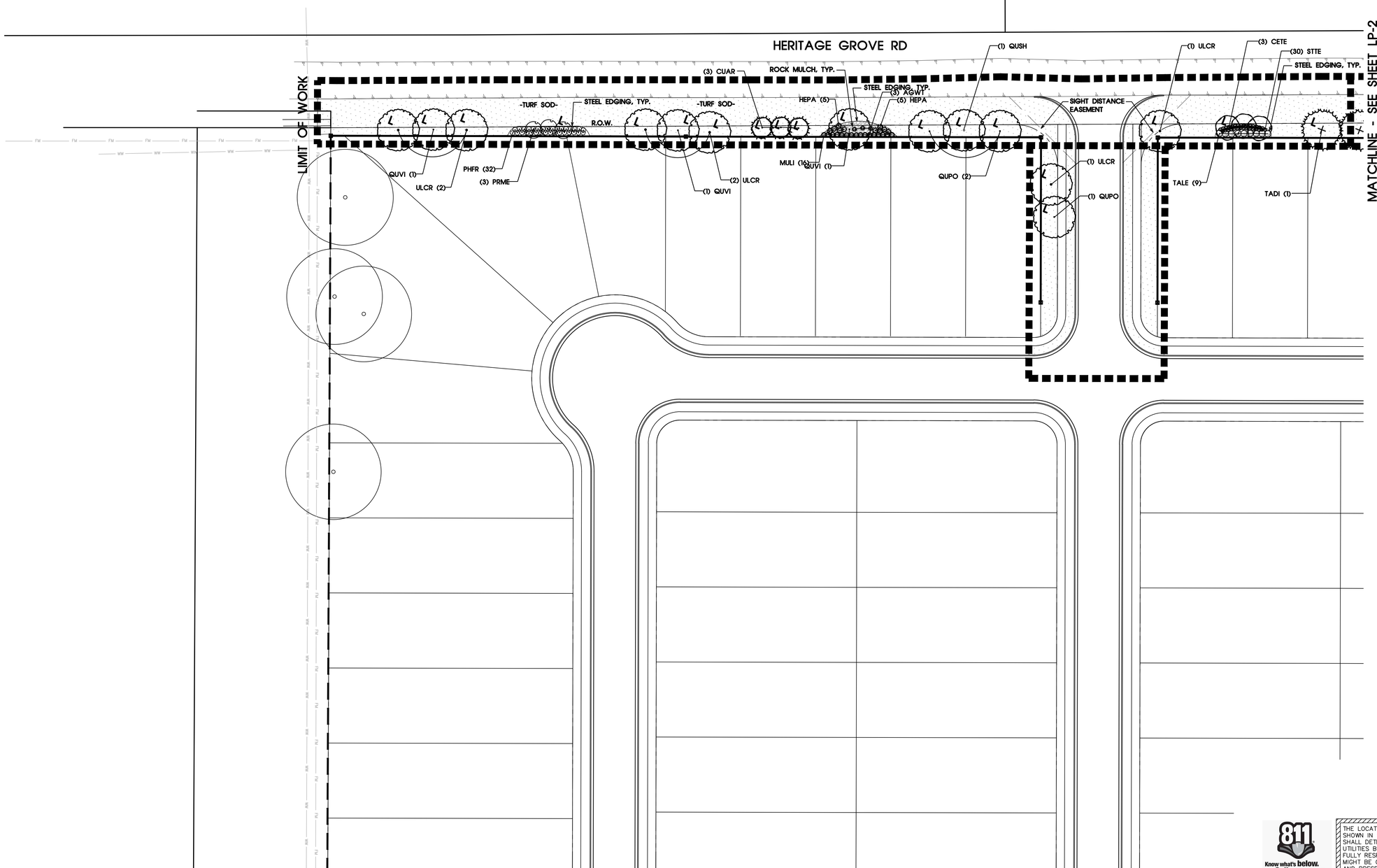

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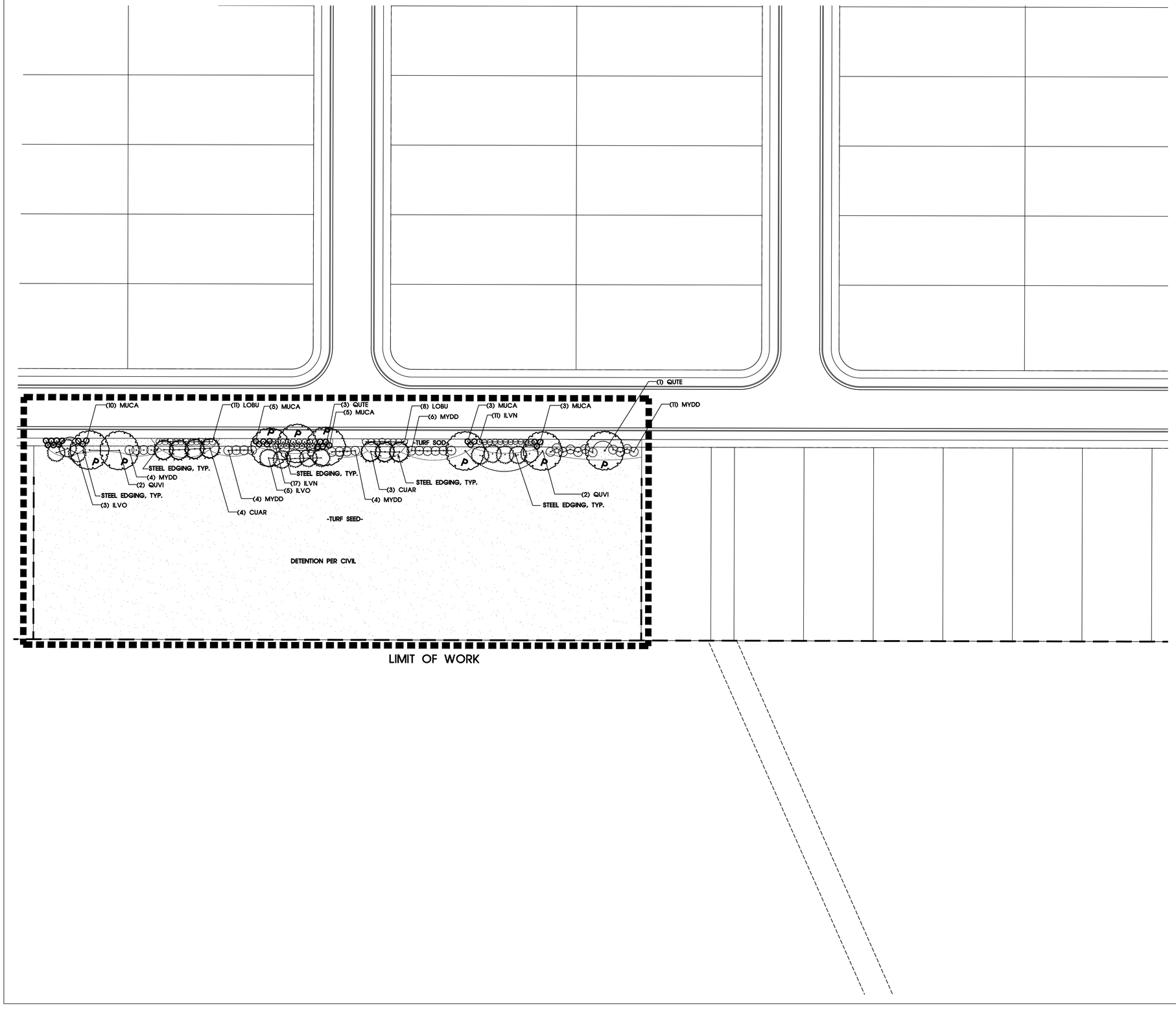
LP-3 _____ of _____



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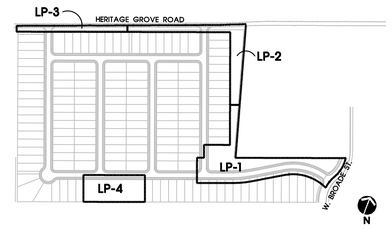

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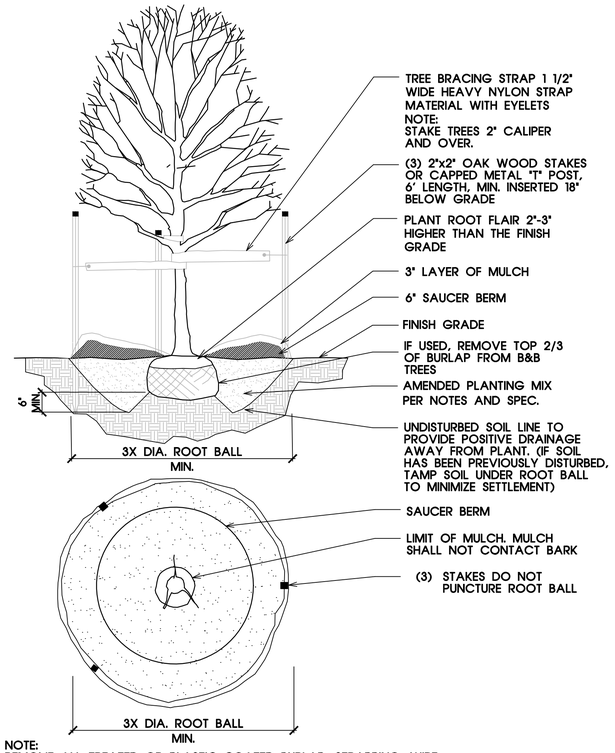
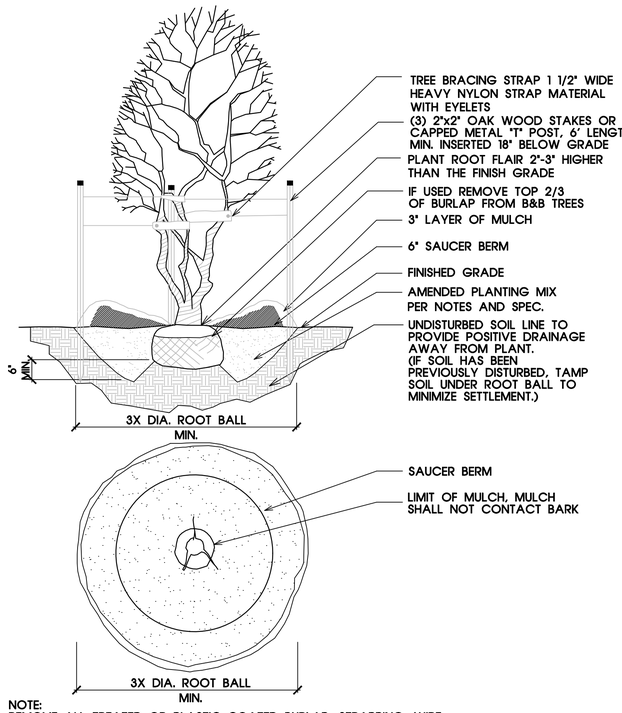


NOTE:
REMOVE ALL TREATED OR PLASTIC COATED BURLAP, STRAPPING, WIRE OR NYLON TWINE FROM ROOT BALL. AFTER SETTING IN HOLE, CUT AWAY TOP AND SIDES OF WIRE BASKET AND REMOVE IF ANY. ANY BROKEN OR CRUMBLING ROOTBALL WILL BE REJECTED. REMOVING THE WIRE WILL NOT BE AN EXCUSE FOR DAMAGE ROOTBALLS.

1 TREE PLANTING
SCALE: NOT TO SCALE



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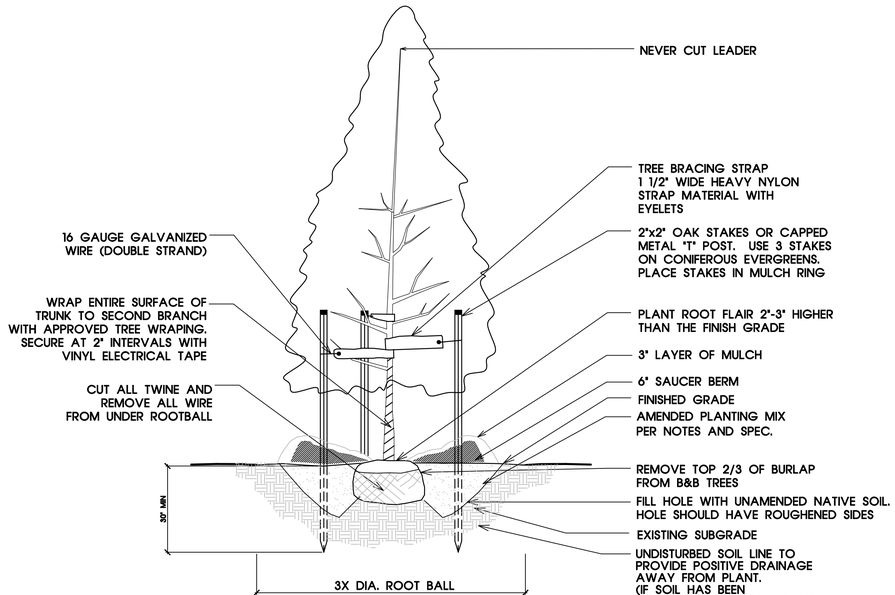
2 TREE PLANTING - MULTISTEM
SCALE: NOT TO SCALE



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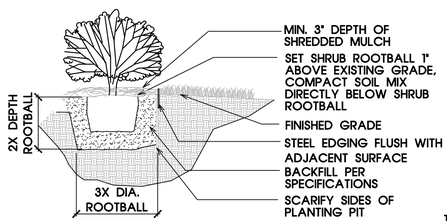
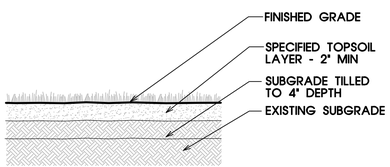
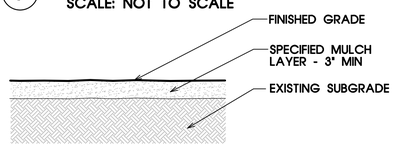
3 TREE PLANTING - PYRAMIDAL
SCALE: NOT TO SCALE



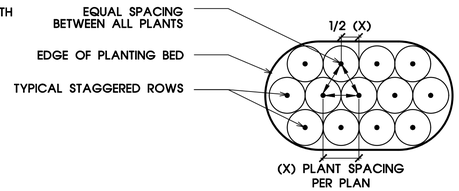
4 SHRUB BED PLANTING
SCALE: NOT TO SCALE



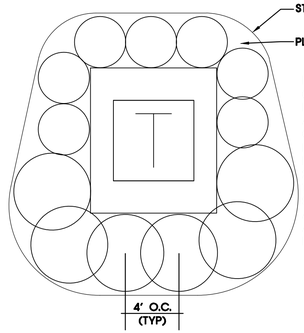
9 TURF SEED AREAS
SCALE: NOT TO SCALE



10 MULCH BED AREAS
SCALE: NOT TO SCALE

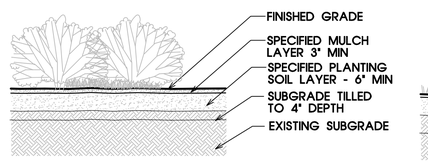


5 PLANTING BED PLAN
SCALE: NOT TO SCALE

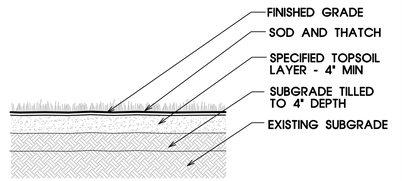


NOTE:
(1) LARGE SCREENING SHRUB SHALL BE PLANTED EVERY (4) LINEAR FEET AROUND THE BOUNDARY OF ALL GROUND-MOUNTED EQUIPMENT. LARGE SCREENING SHRUBS SHALL BE EVERGREEN, MIN. 3' TALL WITHIN 2 YEARS, AND CONSISTENT WITH THE PLANT PALETTE PROVIDED ON SHEET LPN-1. SHRUBS SHALL BE ARRANGED IN A LAYOUT THAT ALLOWS ACCESS TO THE EQUIPMENT'S ACCESS PANEL.

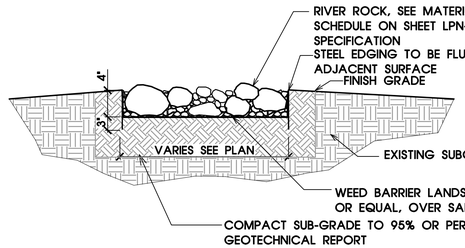
6 SCREENING SHRUBS AT TRANSFORMERS
SCALE: N.T.S.



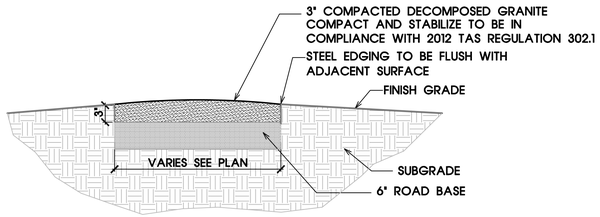
7 PERENNIAL/ANNUAL BED PLANTING
SCALE: NOT TO SCALE



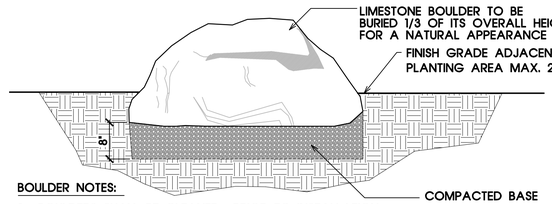
8 TURF SOD AREAS
SCALE: NOT TO SCALE



11 RIVER ROCK AREAS
SCALE: NOT TO SCALE



12 DECOMPOSED GRANITE AREAS
SCALE: NOT TO SCALE



BOULDER NOTES:
1. BOULDERS SHALL BE CLEANED PRIOR TO INSTALLATION.
2. ALL BOULDERS SHALL BE INTEGRAL IN COMPOSITION W/ NO GOUGES/ NICKS CAUSED BY MACHINERY OR CONTAIN OTHER MAN MADE SCARING.

13 LANDSCAPE BOULDERS
SCALE: NOT TO SCALE

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PLANTING DETAILS

Sheet No.
LPD-1 _____ of _____

NOTICE OF CONFIDENTIALITY RIGHTS. IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OF THE FOLLOWING INFORMATION FROM THIS INSTRUMENT BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

SPECIAL WARRANTY DEED

STATE OF TEXAS §
§ KNOW ALL BY THESE PRESENTS:
COUNTY OF WILLIAMSON §

LOWER FORTY, LLC, a Texas limited liability company ("***Grantor***"), for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00), and other good and valuable consideration paid by PULTE HOMES OF TEXAS, L.P, a Texas limited partnership ("***Grantee***"), the receipt and sufficiency of which are hereby acknowledged and confessed, has GRANTED, BARGAINED, SOLD and CONVEYED, and by these presents does hereby GRANT, BARGAIN, SELL and CONVEY, unto Grantee (i) that certain tract or parcel of real property situated in Williamson County, Texas, described on Exhibit A and A-1 attached hereto and made a part hereof for all purposes, together with all and singular the rights, benefits, privileges, easements, tenements, hereditaments and appurtenances thereon or in anywise appertaining thereto, together with all improvements situated thereon and Grantor's right, title and interest in and to all minerals in, on or under such real property (together, the "***Realty***") and (ii) Grantor's right, title and interest in and to any utilities, adjacent streets, and alleys benefiting the Realty (the "***Related Rights***"). The Realty and the Related Rights are hereinafter collectively called the "***Property***".

This conveyance is made subject and subordinate to the encumbrances and exceptions ("***Permitted Exceptions***") described in Exhibit B attached hereto and incorporated herein by reference for all purposes, but only to the extent they affect or relate to the Property.

TO HAVE AND TO HOLD the Property, subject to the Permitted Exceptions, unto Grantee, and Grantee's successors and assigns, forever; and Grantor does hereby bind Grantor, and Grantor's successors, to WARRANT and FOREVER DEFEND, all and singular, the Property, subject to the Permitted Exceptions, unto Grantee, and Grantee's heirs, legal representatives, successors and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof, by, through or under Grantor, but not otherwise.

GRANTEE HEREBY ACKNOWLEDGES AND AGREES THAT THE SALE OF THE PROPERTY HEREUNDER IS AND WILL BE MADE ON AN "**AS IS, WHERE IS AND WITH ALL FAULTS**" BASIS (EXCEPT FOR THE EXPRESS REPRESENTATIONS AND WARRANTIES CONTAINED IN THAT CERTAIN REAL ESTATE SALES CONTRACT DATED JANUARY 3, 2019 (AS AMENDED, THE "***CONTRACT***") AND THOSE SET FORTH IN THIS SPECIAL WARRANTY DEED). GRANTEE ACKNOWLEDGES THAT THE PROPERTY WAS ACCEPTED WITHOUT REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED (EXCEPT FOR THE EXPRESS REPRESENTATIONS AND WARRANTIES CONTAINED IN THE CONTRACT AND THOSE SET FORTH IN THIS SPECIAL WARRANTY DEED). GRANTEE ACKNOWLEDGES THAT GRANTEE IS RELYING ON ITS OWN INSPECTION OF THE PROPERTY, AND THAT GRANTEE HAS NOT RELIED

ON ANY ORAL OR WRITTEN STATEMENTS, REPRESENTATIONS OR WARRANTIES OF ANY SALESPERSON, EMPLOYEE, BROKER, CONTRACTOR OR AGENT OF SELLER WITH REGARD TO THE CONDITION, DESIGN, CONSTRUCTION, FEASIBILITY, DESIRABILITY OR ADAPTABILITY THEREOF OR ANY OTHER ASPECT OF THE PROPERTY, EXCEPT AS EXPRESSLY STATED IN THE CONTRACT, AND FURTHER ACKNOWLEDGES THAT NO SALESPERSON, EMPLOYEE, BROKER, CONTRACTOR OR AGENT OF SELLER HAS THE AUTHORITY TO MAKE ANY STATEMENTS, REPRESENTATIONS OR WARRANTIES. NO PERSON HAS THE AUTHORITY TO MAKE ANY GUARANTY, PROMISE OR REPRESENTATION THAT CONTRADICTS OR CONFLICTS WITH THE TERMS OF THE CONTRACT AND NO SALESPERSON, EMPLOYEE, AGENT OR BROKER HAS MADE ANY SUCH GUARANTY, PROMISE OR REPRESENTATION. GRANTEE ACKNOWLEDGES THAT ANY SUCH GUARANTY, PROMISE OR REPRESENTATION IS VOID AND OF NO EFFECT AND THAT GRANTEE IS NOT RELYING UPON ANY SUCH STATEMENT IN CONJUNCTION WITH GRANTEE'S DECISION TO PURCHASE THE PROPERTY.

All ad valorem taxes and assessments for the Property for the year 2020 are the responsibility of the Grantee, and Grantee hereby expressly assumes liability for the payment thereof and for all subsequent years.

[Signature page follows]

IN WITNESS WHEREOF, this Special Warranty Deed is executed on the date set forth in the acknowledgment below but to be effective as of the 23rd day of September, 2020.

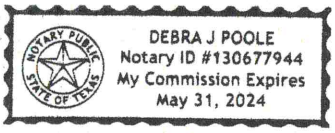
GRANTOR:

Lower Forty, LLC,
a Texas limited liability company

By: _____
Jerry R. Reed, Manager

STATE OF TEXAS §
§
COUNTY OF TRAVIS §

This instrument was acknowledged before me on the 24th day of September, 2020 by Jerry R. Reed, in his capacity as Manager of Lower Forty, LLC, a Texas limited liability company and on behalf of said company.



_____
Notary Public in and for the State of Texas

LIST OF EXHIBITS:

A - Property Description
B - Permitted Exceptions

AFTER RECORDING RETURN TO:

Rigby Slack Lawrence Akinc Pepper &Comerford PLLC
3500 Jefferson Street, Suite 330
Austin, Texas 78731

EXHIBIT A

Description of Property

29.984 tract of land out of the Charles Cochran League Survey, Abstract No. 134, Williamson County, Texas; being a portion of that certain 40.692 acre tract described in instrument to Lower Forty, LLC in Document No. 2016031907 of the Official Public Records of Williamson County; and being more particularly described in Exhibit "A-1".

EXHIBIT "A-1"
Metes & Bounds Description

A METES AND BOUNDS
DESCRIPTION OF A
29.984 ACRE TRACT OF LAND

BEING a 29.984 (1,306,092 square feet) tract of land out of the Charles Cochran League Survey, Abstract No. 134, Williamson County, Texas; being a portion of that certain 40.692 acre tract described in instrument to Lower Forty, LLC in Document No. 2016031907 of the Official Public Records of Williamson County; and being more particularly described as follows:

BEGINNING at a 1/2 inch iron rod with plastic cap stamped "KHA" set on the southeasterly right-of-way line of Heritage Grove Road (Variable Width Right-of-Way) marking the northwestern-most corner of Lot 1, Block A of Heritage Grove Commercial Subdivision, plat of which is recorded in Document No. 2018106375 of the Official Public Records of Williamson County;

THENCE, along the common line of said 40.659 acre tract and said Lot 1 the following two (2) courses and distances:

1. South 16°32'33" East, 717.39 feet to a 1/2 inch iron rod found for corner;
2. North 69°08'26" East; 587.91 feet to a 1/2 inch iron rod with plastic cap stamped "KHA" set at the terminus of the southwesterly right-of-way line of Broade Street (a 35 foot wide public right-of-way) marking the northwesterly-most corner of a 0.24 acre water and wastewater utility easement recorded in Document No. 2018103068 of the Official Public Records of Bexar County;

THENCE, along the said 0.24 acre water and wastewater utility easement the following two (2) courses and distances:

1. in a southerly direction, along a non-tangent curve to the right, a central angle of 36°51'02", a radius of 145.00 feet, a chord bearing and distance of South 11°36'33" West, 91.66 feet, and a total arc length of 93.26 feet to a 1/2 inch iron rod with plastic cap stamped "KHA" set at a point of reverse curvature;
2. in a southerly direction, along a non-tangent curve to the left, a central angle of 51°50'25", a radius of 215.10 feet, a chord bearing and distance of South 4°07'51" West, 188.05 feet, and a total arc length of 194.62 feet to a 1/2 inch iron rod with plastic cap stamped "KHA" set for corner;

THENCE, South 69°07'26" West, 1670.79 feet along the northeasterly boundary of the Enclave at Maya Vista Subdivision, plat of which is recorded in Document No. 2017036058 of the Official Public Records of Williamson county, and that certain 19.00 acre tract described in instrument to Hill Country Bible Church Leander in Document No. 2013018966 of the Official Public Records of Williamson County to a 1/2 inch iron rod with plastic cap found for corner on

the northeasterly line of that certain 2.543 acre tract described in instrument to DSL Commercial Investments, LLC in Document No. 2015001313 of the Official Public Records of Williamson County;

THENCE, along the northeasterly boundary of the said 2.543 acre tract, the following two (2) courses and distances:

1. North 20°37'10" West, 233.70 feet to a 1/2 inch iron rod with plastic cap stamped "KHA" set for corner;
2. North 20°45'58" West, 721.14 feet to a 1/2 inch iron rod with plastic cap stamped "KHA" set marking the northwestern-most corner of the aforesaid 40.659 acre tract on the aforesaid southeasterly right-of-way of Heritage Grove Road;

THENCE North 68°44'32" East, 1263.40 feet to the **POINT OF BEGINNING** and containing 29.984 acres of land in Williamson County, Texas. The basis of bearing for this description is the Texas State Plane Coordinate System Grid, Central Zone (FIPS 4203) (NAD'83). All distances are on the Grid and shown in U.S. Survey Feet. This document was prepared in the office of Kimley-Horn and Associates, Inc. in San Antonio, Texas.

May 8, 2019

John G. Mosier
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EXHIBIT B
Permitted Exceptions

1. Those certain restrictive covenants of record recorded as Document No. 2020002034, Official Public Records, Williamson County, Texas.

2. Inclusion within the Upper Brushy Creek WCID #1A; being evidenced by the Williamson County Central Appraisal District property detail sheet, for subject land.

3. Inclusion within the Tax Increment Reinvestment Zone (Leander); being evidenced by the Williamson County Central Appraisal District property detail sheet, for subject land.

4. Inclusion within the Williamson County Road (FM/RD) District; being evidenced by the Williamson County Central Appraisal District property detail sheet, for subject land.

5. Mineral and/or royalty interest in and to all coal, lignite, oil, gas and other minerals; together with all rights incident thereto recorded as Volume 930, Page 468, Deed Records, Williamson County, Texas.

6. Mineral and/or royalty interest in and to all coal, lignite, oil, gas and other minerals; together with all rights incident thereto recorded Volume 1327, Page 221 and Volume 1327, Page 224, both of the Official Records, Williamson County, Texas.

7 Terms, Conditions, and Stipulations in the Development Agreement recorded in Document No. 2020002034, Official Public Records, Williamson County, Texas.

8. Matters shown on that survey dated 9/22/2020, prepared by John G. Mosier, R.P.L.S. 6330.